SUPER WIN95 TIP P.57

How to Sneak Back to DOS in *Win95*

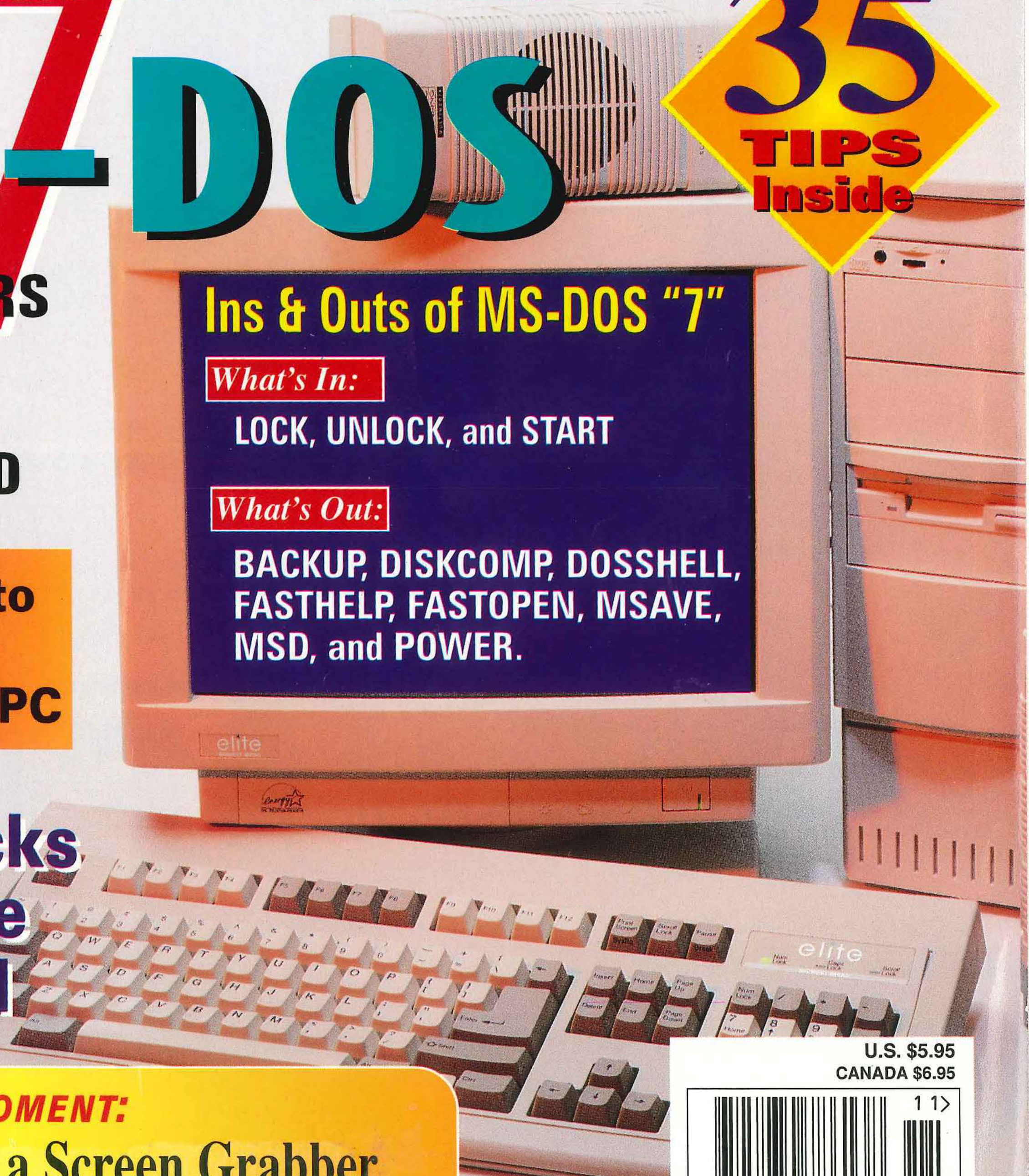
DOS WORLD

The Essential Guide to DOS and Windows

November 1995 • Number 24

The DOS "Microsoft Won't Tell You About!

MS-DOS 7



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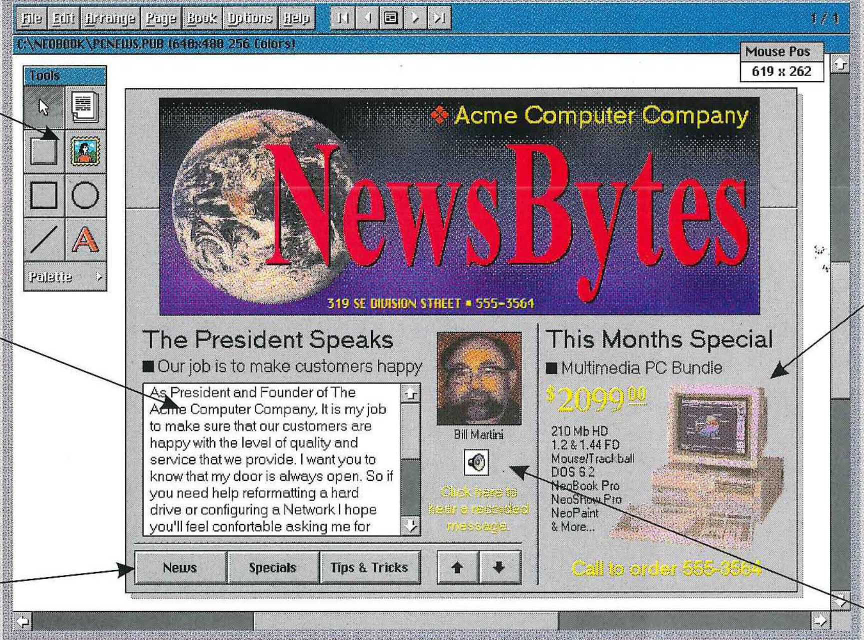

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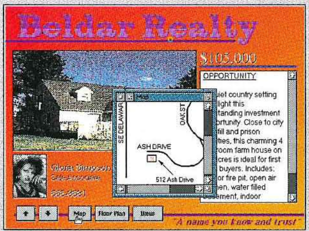

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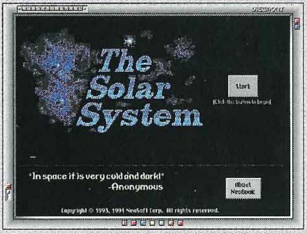

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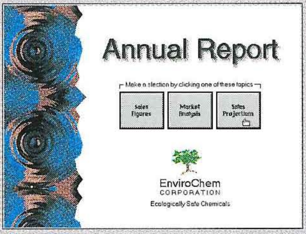

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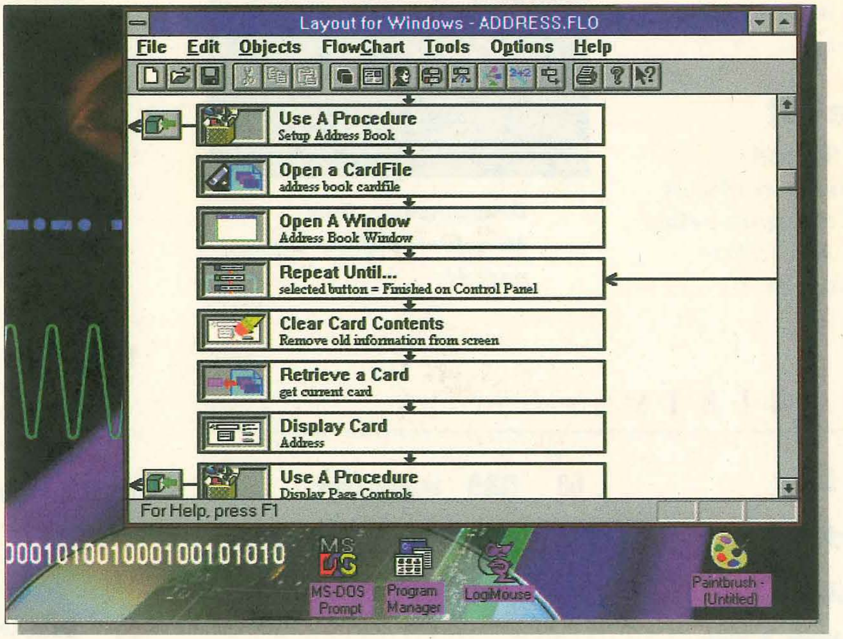

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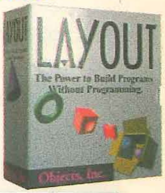

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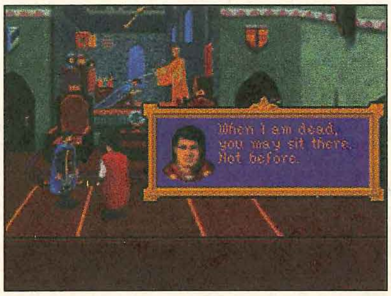

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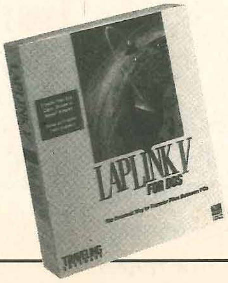

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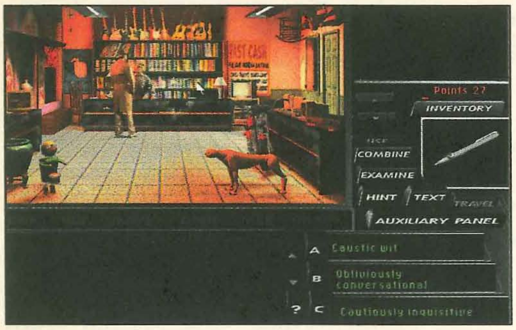

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DOS World *welcomes letters, complaints, and submissions from readers. The easiest way to reach the editors is the U.S. mail:* DOS World*, 86 Elm St., Peterborough, NH 03458. All letters to the editor and questions are understood to be submitted for publication unless otherwise indicated. You can reach our staff electronically over CompuServe at* ***75300,2361*** *or the Internet at* ***75300.2361@compuserve.com*** *or* ***editors@iway.mv.com***.. *Please include your complete address and a daytime phone number on your correspondence.*

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EDITORIAL

Our Readers, Write or Wrong!

by Michael J. Comendul

A call last issue for your plans and thoughts about Windows 95 nearly blew the doors off. We received both insightful comment and severe criticism. Ed Mortimer importunes us not to "join the Lost Majority" of computer magazines tripping over themselves to cover Windows. (No chance, Ed.) R.C. Day likens Windows 95 to "the road iron of the 1950s and 1960s. Those cars had lots of chrome and gadgetry, but they were very inefficient." R.S. Ochsner worries about our mental health: "Isn't it about time you get over your ambivalence about Windows?" Mr. Ochsner accuses *DOS World* of taking "four or five positions" in the past about how our publication will cover Windows. (I disagree, but Mr. Ochsner is telling the story.)

What Mr. Ochsner calls our ambivalence, or mixed feelings, may irritate other readers as well. After all, as many of you point out, our company has started another magazine to cover Windows, so where's the problem in keeping this magazine exclusive to DOS? Do we, as editors, "protest too much"?

The problem is that the impact of Windows 95 on DOS and on computer enthusiasts who enjoy *DOS World* is much different from the impact of Windows 3.1 thus far felt among DOS users. Windows 95 has created more editorial angst than usual, and that's because of Microsoft's assertion that DOS no longer exists. A lie, of course, but more to the point, what is the perception created among new computer owners? How will less experienced PC users view computing now and in the future? Because we, too, must draw from these newcomers as potential readers, how can we state our case best?

What began as an instructional magazine covering batch files, memory questions, and DOS commands clearly has become a magazine about how PCs work and how DOS and other programs control the computer. At *DOS World* we not only cover DOS and Debug, but write about maintaining your computer, upgrading it, using applications with it, and, yes, using Windows where it's advantageous or necessary.

Why this expansion of coverage? One reason is your self-empowerment. What unites *DOS World*'s readership is a shared desire to understand personal computers. And to us that means keeping you aware, not only of how to use DOS to solve problems, but of advances in the system bus, in chip technology, in data storage, and in peripherals. As both new and commonplace operating environments alter the topography of PCs, so *DOS World* readers will have to understand them.

Our readers make full use of that understanding. The influence of *DOS World* readers on computer users around them continues to astound and gratify the staff. Whether or not you, as a reader, will use Windows 95, I guarantee you'll know someone who's struggling with it, and he or she will, as in the past, need your help to repair the problem. We want you to be prepared.

And because I don't want you to think we operate in a vacuum, I'll leave you with a quote from Herbert Jackson, of Danvers, Massachusetts, who says that "*DOS World* will have to change. If it doesn't, it will die a slow death." Enough hyperbole, Herb. We're not going away anytime soon. ■

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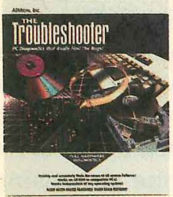

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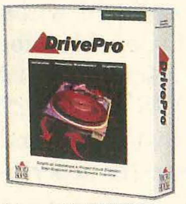

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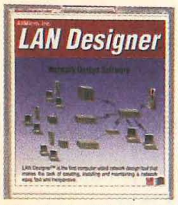

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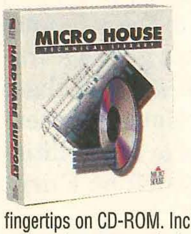

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DR

DOS WORLD

Letters to the Editor

We're No Dummies

I read Roland Curit's letter regarding "The Seven Deadly DOS Commands" and Dan Gookin's rather caustic reply ["Letters to the Editor," *DOS World* #22, July 1995, page 6]. I happen to agree with Curit. Our opinions, however, apparently put us in a minority of two. After all, anyone who has devoted his life to educating more than three million dummies must certainly know more than the rest of us mere mortals. He's certainly put us in our place!

It's possible that Curit and I are the only two people who have taken the time to read the manuals Microsoft sent with our operating systems and who refer to them on an ongoing basis. Because we both like DOS and use it often, we try to expand our knowledge by reading publications such as yours. We both assumed that *DOS World* articles are aimed at those of us who are at least a half-step beyond the dummy stage.

We'll direct our attention elsewhere to find a source of information not aimed at dummies.

Bob Landig
Watha, North Carolina

Give Us Whys and Wherefores

Roland Curit's letter berating Dan Gookin for "The Seven Deadly DOS Commands" states confidently: "The vast majority of your readers are experienced DOS users . . . ." Is that supposed to be a statistic of some kind? I suspect that Dan Gookin is much closer to the truth when he assumes that 85 percent of the people using DOS don't understand it.

The best article I ever read for people like me was Ken Johnson's "10 Reasons to Load DOSKEY" [*DOS Resource Guide* #13, January 1994, page 26]. First, it told me why I'd want to load DOSKEY and what it can do for me. Then it told me how to use it, spelled out examples, and showed me how to save my macros and have my AUTOEXEC.BAT call them each time I booted.

May I offer a suggestion? Start by telling us *why* we might want to use a particular command, then give us some examples of when it would be useful. Consider, for instance, the DOS reference card that appeared in *DOS World* #22 [July 1995]. The first command mentioned is APPEND. Its description says that it establishes a search path, which permits programs to locate files outside the current directory. Why on earth would I ever want to use that? What is "the directory to be appended"? And how do you do it?

I'm not objecting to the reference card; it's fine. I'm suggesting articles that expand on some of these commands. Call it "Novice Corner," so as not to offend the sensibilities of expert readers such as Curit. But don't desert us!

Vivian P. Ramsay
Bay St. Louis, Mississippi

ERRORS AND OMISSIONS

The Fix Is In

I want to thank Robert L. Hummel for the utilities presented in "Working with Drives" [*DOS World* #21, May 1995, page 32]. I noticed a bug, however, in INSTALL.BAT that will crop up if users run the program from a floppy drive. The next-to-last line of the batch file deletes the batch file it executes. Because the file hasn't finished executing yet, DOS wants it back in the drive so that it can continue processing the batch file. When the file has been deleted, DOS displays this error message:

```
Insert disk with batch file
and press any key when ready
```

You may press Ctrl+Break or Ctrl+C and answer `Y` to the "Terminate batch job Y/N?" message. But many users won't understand what has happened and won't know what to do. My solution is to add this line immediately below the label :COPY1:

```
IF NOT %5!==! GOTO ENDJOB
```

Then replace `DEL %0.BAT` with this:

```
:JOBDONE
ECHO Put program disk 1 in drive %1.
PAUSE
DRVREADY %1
IF ERRORLEVEL 1 GOTO DONEJOB
DRVLABEL %1 "UTILITIES#1"
IF ERRORLEVEL 1 GOTO DONEJOB %1
%0 %1 %2 %3 %4 FLOPPYDRIVE

:ENDJOB
DEL %2\%3\%0.BAT
```

These lines rerun INSTALL.BAT from the floppy drive, using a fifth parameter, which enables the version of INSTALL.BAT on your floppy disk to delete the version of INSTALL.BAT on the hard disk.

J.I. Ahmad
Reading, Pennsylvania

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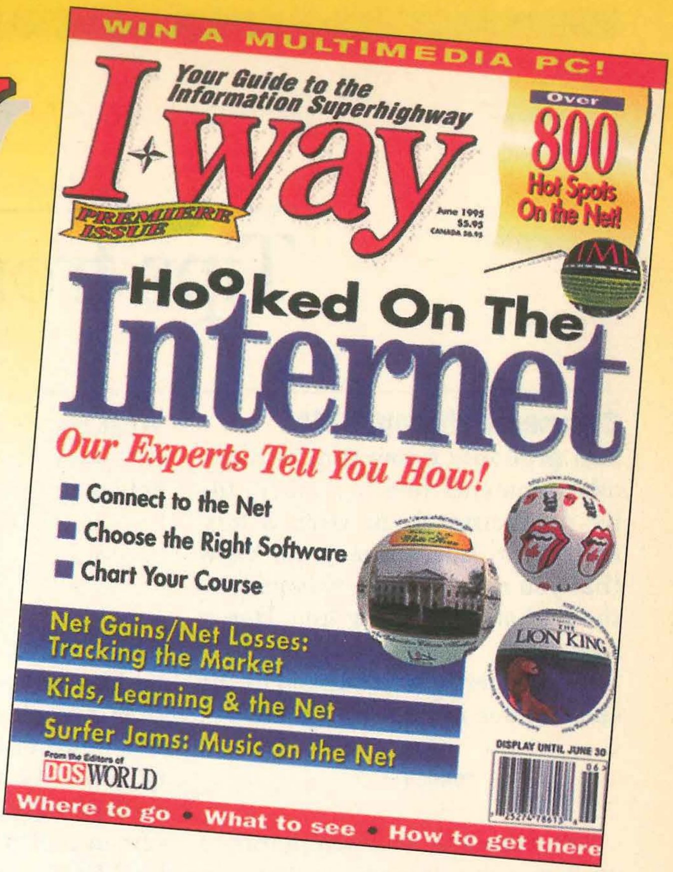

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DOS WORLD

Tips from Readers

Comments Without REM

You probably know that you can add comments to a CONFIG.SYS file by prefacing them with a REM statement. But you may not know that you can also add comments to the end of an existing line. Here's how.

First, insert this command as the opening line in your CONFIG.SYS file:

```
COMMENTS ??
```

Then use two question marks to preface each comment, as shown in this command:

```
DEVICE=C:\DOS\ANSI.SYS ??This
  driver lets you create
  colorful prompts.
```

Finally, reboot to have your changes take effect.

Kate Chase
New Milford, Connecticut

Select-O, Change-O

I have a program that saves paper by printing text files in booklet or two-column format, using condensed print. Unfortunately, the program stops if it encounters a printer-control code, such as a form-feed character.

To avoid problems of this type, I copy my original text file to a new file and load the new file into DOS's editor, EDIT.COM. To delete a particular control code, I use my mouse to highlight that symbol, then select Edit/Copy to copy the symbol to EDIT.COM's clipboard. Next, I open the Search menu and select Change, which pastes the clipboard's contents into the Find What box. Finally, I select Change All, while leaving the Change To option blank.

Anthony G. Weiss
Dover, Deleware

Personalize Your DOS Sessions

I'd like to share two ways I make DOS a brighter and more informative place to work. To take advantage of my first customization method—adding color to your DOS screen and its prompt—you must load DOS's ANSI.SYS device driver into your CONFIG.SYS file by adding this line:

```
DEVICE=C:\DOS\ANSI.SYS
```

Change the path if you store ANSI.SYS in a directory other than C:\DOS.

Then add these three lines to your AUTOEXEC.BAT file (note that the second line shows overflow here because of space limitations; when you type that line in, don't place a space between $E and the preceding character, except in the first instance, PROMPT):

```
SET LOGO=MY DOS SESSION
PROMPT $E[s$E[f$E[7;1;33;41m
  $E[K$D$E[14C$E[37m%LOGO%
  $E[21C$E[33m$T$H$H$H
  $E[0;1;32m$E[u$E[A$_$P
  $E[31m$G$E[36m
SET LOGO=
```

Next, save your AUTOEXEC.BAT file and reset your computer by pressing Ctrl+Alt+Del.

When you're working at the DOS prompt, DOS will display a red banner at the top of the screen. At the far left, you'll see the day and date in yellow; in the center, displayed in bright white, is the message "MY DOS SESSION." (You can change this message by altering the first of the three lines above.)

At the far right, the time is displayed in yellow. Your DOS prompt will display the current drive and directory in green; the greater-than (>) symbol will appear in red. DOS commands you enter, as well as their output, are displayed in cyan. The accompanying table, "PROMPT Sequences" (page 10) explains what each element of the PROMPT command does.

My second customization step is using the variable WINPMT to create a special prompt that will appear when you run a DOS session under Windows. To take advantage of WINPMT, add the following line to your AUTOEXEC.BAT file (immediately after the three lines shown above):

```
SET WINPMT=$E[s$E[f$E[7;1;33;41m
  $E[K DOS Windows Session
  $E[26CType EXIT to End,
  Alt+Tab to switch tasks
  $E[0;1;32m$E[u$P$E[31m$G
  $E[36m
```

After setting up WINPMPT, it's safe to get rid of the annoying warning that Windows displays when you run a DOS session. To do that, load SYSTEM.INI into an editor that saves files in text format. Then add the following line to the section labeled [386Enh]:

```
DosPromptExitInstruc=FALSE
```

A word of caution: DOS commands have a maximum length of

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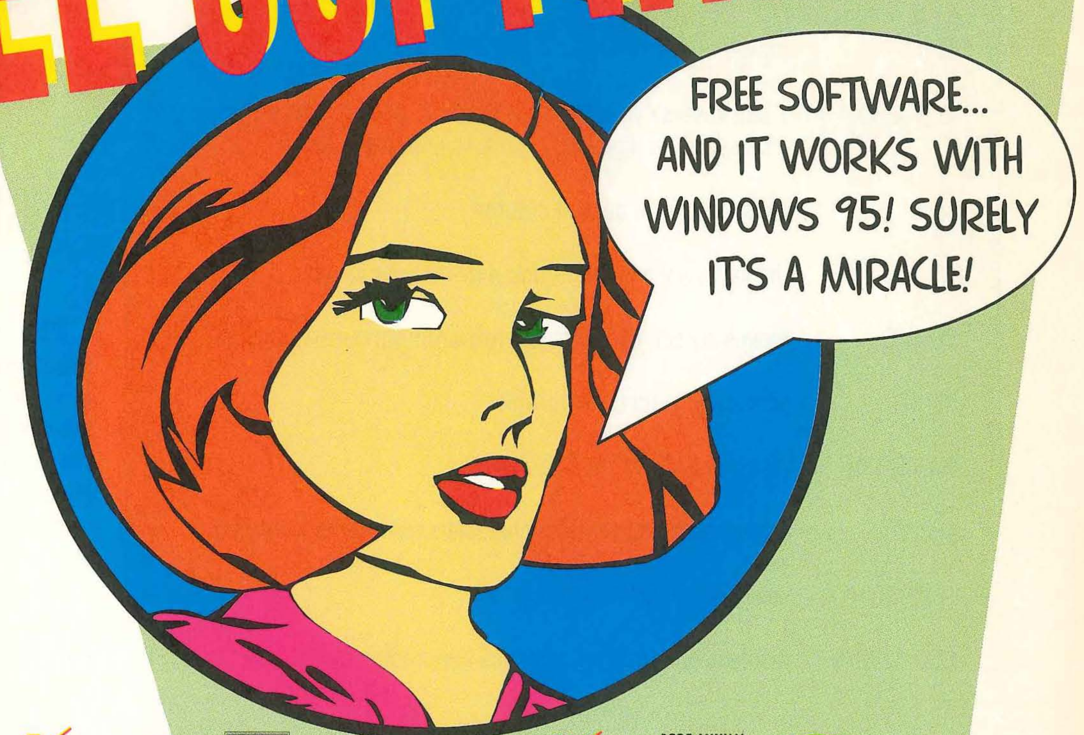
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PROMPT SEQUENCES

Sequence	Function
$E[s	saves current cursor position
$E[f	moves cursor to line 0, column 0
$E[7;1;33;41m	7 sets reverse video, 1 turns bold on, 33 sets yellow foreground, 41 sets red background, m marks end of sequence
$E[K	clears line from current column
$D	displays system date in *ddd mm-dd-yyyy* format
$E[14C	moves cursor 14 characters forward from current column
$E[37m	sets foreground color to white
%LOGO%	displays text *MY DOS SESSION*
$E[21C	moves cursor forward 21 characters from current column
$E[33m	sets foreground color to yellow
$T$H$H$H$	displays current time, removes hundredths of seconds
$E[0;1;32m	0 (zero) sets all attributes off, 1 turns on bold, 32 sets color to green
$E[u	restores cursor position as saved by $E[s
$E[A	moves cursor up one line
$_	starts new line
$P	displays current drive and directory
$E[31	sets color to red
$G	displays greater-than symbol
$E[36m	sets color to cyan

127 characters. My prompt lines are within striking distance of that limit, so be careful not to place a long message in them. If you exceed the limit, DOS won't execute the entire PROMPT or WINPMT command.

Leslie Peaker
Denver, Colorado

In the Loop

Here's my method for getting a batch file to execute a loop a certain number of times; it uses Technical Editor Hardin Brothers' technique for parsing batch-file commands ["A Batch-File Breakthrough," *DOS World* #19, April 1995, page 36].

These ten lines, for instance, execute a loop four times (note that line 5 shows overflow here):

```
IF NOT %X%U==U GOTO END
   SET X=[XXXX]
      :START
      FOR %%A IN (/%X%) DO SET X=%%A
      FOR %%B IN (%X%) DO, IF
        %%B==], GOTO FINISHED
      ECHO LOOPING...%X%
      GOTO START
   :FINISHED
   SET X=
:END
```

The first line checks to see whether the environment variable X is in use. (It's a good idea to reserve single-character variables for temporary use.) In the second line, the number of Xs within brackets indicates the number of times you want to execute the loop.

When you run a batch file containing these lines, DOS displays the following messages before displaying the prompt:

```
LOOPING...xxxx]
LOOPING...xxx]
LOOPING...xx]
LOOPING...x]
```

To use this loop to execute a particular command a certain number of times, change the number of Xs shown within brackets and replace the command ECHO LOOPING...%X% with the command you want to repeat.

Homer Tilton
Tucson, Arizona

Submit tips on disk to* DOS World*, 86 Elm Street, Peterborough, NH 03458, or electronically via CompuServe (75300,2361), the Internet (75300.2361 @compuserve.com or editors@iway.mv.com), MCI Mail (668-4855), or the* DOS World *BBS (603-924-3181; 8,N,1).

READER FORUM

Knowing Your BIOS From Your CMOS

by Hardin Brothers

My article "Without You I'm Nothing," in the May 1995 issue of *DOS World* (#21, page 28), seems to have sparked a great deal of interest. More than half the letters I received for "Reader Forum" this month are related to that feature. I'm gratified that so many readers took the article seriously, but I seem to have caused some confusion, for which I apologize. I'm going to start this month with one of those letters, and then move on to other issues troubling our readers.

If you don't check out the source of your PC's strength, you could wind up adrift at sea—with no help in sight.

Desperately Seeking Setup

I seriously need to follow the procedures in the article about CMOS RAM, but in my half-dozen books and DOS versions up to 5, I can find no reference to SETUP.EXE. What am I missing?

Ernest E. Loft
Brooksville, Florida

First, a quick recap for those who missed the original article. The BIOS found in all 80286 and later computers stores essential configuration information (the types and sizes of floppy- and hard-disk drives, amount of memory, and so on) in a special piece of memory called CMOS RAM. The same hardware also contains the computer's real-time clock. The CMOS memory and real-time clock both depend on a battery, which can fail after a few years of service. If the battery fails, you must replace it and then recreate the contents of the CMOS RAM to get your computer running again. If you haven't yet, you *must* create a record of the CMOS contents.

Most 80286 computers and some early 386 models used a program called SETUP.EXE or SETUP.COM to view and change the configuration information in the CMOS RAM. Most 386 models and virtually all 486 and Pentium computers include the setup program in the BIOS. To run the setup program on these later computers, watch the screen carefully as you boot up or reboot. You'll probably see a message such as "Press Shift+F1 to run Setup." The key combination and the message vary from one machine to another.

If you don't see such a message, you have to run the SETUP program from disk so that you can view, record (on paper), or change the computer's basic configuration. SETUP isn't part of DOS, nor is it a utility you can download from a service or BBS, because it's customized to work with your computer and BIOS. If you received a disk of utilities with your computer, it should be on that disk. Or you may find it in a special subdirectory on your hard disk. Be careful, though. Windows and many individual applications include separate setup programs for their particular installations. That's *not* the setup program you need.

If all else fails, you may be able to get a copy from the computer manufacturer or the BIOS maker. To order a replacement, you'll probably need to know the computer's type (including CPU and speed), perhaps the serial number, and the general BIOS information you see when you boot up: BIOS manufacturer, version number (if there is one), and BIOS date. Once you have the program, save a copy on your emergency boot-up disk.

With some computers, you can make a print copy of the BIOS information by pressing Shift+Print Screen. With other computers, this trick won't work, and you'll have to copy the information manually.

If you haven't done so yet, make a print copy of your SETUP screens today. One of the editors here at *DOS World* hadn't done so, and, while she was working on the original article, the battery in her computer failed. Luckily, she was able to copy the SETUP information from an identical machine in our office after replacing the battery. You may not be as lucky!

Installation Hangup

To add a Tools menu to File Manager, I tried to follow your instructions in the "Letters to the Editor" section of DOS World *#18 (November 1994, page 6) by using the original DOS installation disk and typing* `A:SETUP /E`*. I didn't receive any installation disks with my computer, but I do have a CD-ROM system disc with DOS on it, separated into \DISK1, \DISK2, and \DISK3 directories. I copied them to floppies and then pressed Ctrl+Alt+Delete. The response was "Nonsystem disk or disk error."*

Richard Mueller
Myrtle Beach, South Carolina

It sounds as though you did everything correctly—almost. What you forgot is that you needed to boot from \DISK1. Most disks aren't "bootable": The first sector contains an error message instead of instructions to start your computer and load an operating system.

To make a disk bootable, you must format it with the /S option, or use the SYS command if the disk is empty. Either way, three things will happen:

- First, DOS alters the boot sector (the first sector on the disk) to load the operating system instead of displaying the error message.
- Second, DOS stores the two "hidden" DOS files (IO.SYS and MSDOS.SYS) on the disk. These two files load during bootup to create a DOS environment on your computer (as opposed to, say, OS/2, Windows NT, or Windows 95).
- Finally, DOS adds COMMAND.COM to the disk to give you a DOS prompt.

If you use MS-DOS 5 or earlier, you'll have to copy COMMAND.COM to the disk. Neither SYS nor FORMAT /S can do it for you.

Once you've done that, you can copy files from the \DISK1 directory on CD-ROM to the floppy disk to make a true, bootable DOS installation disk.

But you don't have to go to all that trouble just to create a Tools menu in File Manager or to add programs to that menu. You can do the same thing manually and, often, with less hassle. It's actually a lot faster to perform this manual installation than it is to explain:

- First, look for the file EXPAND.EXE in your \DOS directory. If it's not there, copy it from your CD-ROM or DOS disks.
- Next, back up your \DOS, \WINDOWS, and \WINDOWS \SYSTEM directories. If anything goes wrong, you can get back to where you started from the backups.
- Now log onto the CD-ROM drive or your DOS floppy disks, one at a time. Scan through the files. You'll need to copy several files from your \DOS directory, unless they're already there: MSTOOLS.DLL plus all DLL and EXE files whose names start with MW.
- Compressed files are stored on the DOS disk with a final underscore in the extension (for example, MSTOOLS.DL_). You'll have to use the EXPAND command instead of COPY with those files. The syntax for EXPAND is as follows:

```
EXPAND compressed_file uncompressed_file
```

For example, you can move and uncompress MSTOOLS with this command:

```
EXPAND MSTOOLS.DL_ C:\DOS\MSTOOLS.DLL
```

- You'll also have to add the file VFINTD.386 to your \WINDOWS\SYSTEM directory unless it's already there. In all cases, make sure you don't replace a file with an older version.
- Once all files are in place, your last job is to edit WINFILE.INI, which sets options for File Manager. You should find that file in your \WINDOWS directory. If you don't locate the line [AddOns], append it to the end of the file. After [AddOns], type this line:

```
Tools=C:\DOS\MSTOOLS.DLL
```

- Save WINFILE.INI and then start File Manager. You should see Tools on the menu bar. Select it and try each of the options to make sure they all work.

Beating the DISKCOPY Shuffle

I hope you can solve a puzzle concerning the DISKCOPY command. Since I installed DOS 5 over DOS 4.01, I haven't been able to copy a floppy disk in a single pass. I'm currently running DOS 6.22. I could use a shareware or commercial disk-copy program, but that would be evading the puzzle instead of solving it.

Herman J. Jaffe
New York, New York

DISKCOPY works by reading a chunk of data from a source disk, writing that data to a destination disk, and then repeating the process until it has copied the contents of the entire disk. (It also formats the destination disk, if necessary.) If you use just one drive for a DISKCOPY operation, you'll have to swap disks back and forth unless the "chunk" of data is large enough to copy the entire disk at once.

Unfortunately, one pass is rarely enough, at least for most versions of DISKCOPY.COM. Because DISKCOPY stores its data in conventional memory, you can never copy a 720K, 1.2MB, or 1.44MB floppy disk in a single pass, because your computer never has more than 640K of conventional RAM—and some of that is taken up by DOS and DISKCOPY.

Swapping disks isn't just a major annoyance; more than one user has carelessly inserted the wrong disk at the wrong time and wiped out the original version of his or her data, or the copy, or even both.

Microsoft ended the DISKCOPY shuffle with DOS 6.2. Newer versions of DISKCOPY can store the chunk of data read from the source disk either in conventional memory or in a temporary file on your hard drive. If your hard drive has enough room, and if you've set TEMP= to point to a temporary directory, then DISKCOPY will read all the data from the source disk, ask you to insert the destination disk, copy all the data to it, and then erase the data from your hard disk.

To make it work that way, first you must have DOS 6.2 and its version of DISKCOPY. Next, in your AUTOEXEC.BAT file, you should have a line that starts with SET TEMP=. The equal sign must be followed by the name of an existing directory. Then make sure that your \TEMP directory is on a drive with at least 1.5MB of free space. If you don't have enough free space, you'll have to swap disks each time DISKCOPY fills your hard disk. If you have enough hard-disk space, you should be able to copy one disk to another in one drive with a single swap. If you still face the DISKCOPY shuffle, you can still try a couple of troubleshooting possibilities:

- First, make sure that you're not using DISKCOPY's /M option, which tells it to use only conventional memory and to not store data on your hard disk. This option makes sense if you have a very slow (or no) hard disk, or if you're copying 360K or 180K floppies—the ones you're probably using as coasters right now instead of as data repositories.
- Next, make sure you're using the correct version of DISKCOPY. From the root directory, run this command:

```
DIR DISKCOPY.* /S
```

to see whether your hard drive contains more than one version of DISKCOPY. If it does, delete them all, except the one with the most recent date.

I haven't had any trouble with DISKCOPY, but I must admit that I seldom use it. Occasionally, I'll run DISKCOPY to copy an application's installation disks. On almost every other occasion, I use either COPY or XCOPY instead. ■

WANT TO KNOW MORE?

If you have a question, or need further help with something that has appeared in DW, write:

Reader Forum
DOS World
86 Elm St.
Peterborough, NH 03458

Please include a copy of your AUTOEXEC.BAT and CONFIG.SYS files on disk if you have particular problems with software or hardware conflicts and compatibility.

DOS TIP

GIVE MEMMAKER SOME HELP

If you use MemMaker to free memory by moving device drivers and memory-resident programs (TSRs) into upper memory, you may still need to tweak your CONFIG.SYS and AUTOEXEC.BAT files to open the maximum amount of space in memory. Because MemMaker doesn't vary the order in which drivers and programs are loaded, it may not be able to find room in upper memory for a program requiring a larger amount of space when loading than when running.

To see whether you might be able to kick more programs upstairs, call up MemMaker, then load the text file C:\DOS\MEMMAKER.STS into an editor. For each driver and program loaded, MEMMAKER.STS lists the installed size (FINALSIZE) and maximum size (MAXSIZE). Look for the drivers and TSRs whose loading and final sizes differ the most. For the best fit, rearrange CONFIG.SYS and AUTOEXEC.BAT, placing the programs that require significantly more loading space near the top.

When you rerun MemMaker, you'll probably manage to load more programs high and thus free up more conventional memory.

—Ken Johnson

DOS WORLD

Best of the Batch

HEAVY LOAD

For a while now, I've wanted to write a batch file that lets you type the name of a file and then loads that file automatically into the appropriate program. For example, this command:

```
LOAD BUDGET.WK1
```

would run Lotus 1-2-3 and load BUDGET.WK1. On the other hand, this command:

```
LOAD FILENAME.TXT
```

would run XyWrite and load FILENAME.TXT.

If you're familiar with Windows, you might recognize this as an ersatz Associate function. Windows lets you attach an extension to a particular program; when you type the name of the data file, Windows recognizes the extension and retrieves the proper program.

The problem with writing a DOS Associate program lay in separating the basename from the extension. How do you get the batch file to recognize BUDGET and WK1 as separate elements?

Magic FOR-IN-DO

The FOR-IN-DO slash provides the answer. It lets you break off the extension, compare it with a table of extensions, and then run the matching program. The result is the batch file LOAD.BAT (see the first listing, right) and its supporting data file, LOAD.DAT (second listing, opposite, bottom right). Here are some of LOAD.BAT's most important features:

- It searches the entire hard drive for the file; you don't need to be in the proper subdirectory. This makes LOAD.BAT useful for finding and loading lost files.
- You can specify a program as a second parameter. This lets you override an association or find and load a data file with an unassociated filename. You must include the full path of the program, or it must be available through your PATH statement in AUTOEXEC.BAT. The syntax is as follows:

LOAD.BAT automatically loads a selected file into the appropriate program. To produce the omega in EDIT.COM, hold down the Alt key and type 234 on the numeric keypad (Num Lock on).

```
@ECHO OFF
GOTO START
LOAD.BAT......Loads program and file at command line
:START
IF "%1"=="" GOTO HELP
IF "%1"=="[SETFILE]" GOTO SETFILE
::
::Convert %1 to uppercase
SET OLDPATH=%PATH%
PATH %1
SET DATAFILE=%PATH%
SET PATH=%OLDPATH%
SET OLDPATH=
IF NOT "%2"=="" GOTO COMPARE
::
::Extract extension from filename
SET CMD=%DATAFILE%
:LP
SET ORIG=%CMDΩ %
FOR %%A IN (/%CMD%) DO IF NOT "%%A"=="Ω " SET
  CMD=%%A
FOR %%A IN (/%ORIG%) DO IF %%A==. GOTO COMPARE
FOR %%A IN (/%ORIG%) DO IF "%%A%"=="Ω " GOTO
  NOEXTENSION
GOTO LP
::
::Determine appropriate program, based on extension
:COMPARE
IF NOT "%2"=="" SET PROGRAM=%2
::Table of extensions; add extensions here
IF "%CMD%"=="TXT" SET PROGRAM=C:\XY\EDITOR
IF "%CMD%"=="BAT" SET PROGRAM=C:\DOS\EDIT
IF "%CMD%"=="WK1" SET PROGRAM=C:\QPRO\Q
IF "%CMD%"=="WQ1" SET PROGRAM=C:\QPRO\Q
IF "%PROGRAM%"=="" GOTO BADEXTENSION
GOTO FILEFIND
::
::Determine appropriate program if the file has
  no extension.
:NOEXTENSION
SET PROGRAM=C:\DOS\EDIT
GOTO FILEFIND
::
::Show error message if extension has no match
:BADEXTENSION
CLS
ECHO.
ECHO The extension %CMD% hasn't been associated
ECHO with a program.
```

continued

```
LOAD filename programname
```

- LOAD.BAT provides a default program for data files without extensions. You'll find this in the NOEXTENSION subroutine; it's currently the DOS editor, EDIT.COM.
- The batch file displays an error message if you type a filename with an unassociated extension.

```
ECHO.
ECHO You may add %CMD% to the list of
ECHO associated extensions that
ECHO follow the :COMPARE label in the batch file.
GOTO RESET
::
:HELP
ECHO Syntax for %0.BAT is %0 [filename].
ECHO.
PAUSE
GOTO RESET
::
::Routines to find file specified at command line
:FILEFIND
COPY C:\BAT\%0.BAT C:\BAT\%0A.BAT>NUL
::First check current directory for file
IF NOT EXIST %DATAFILE% GOTO SEARCHDRIVE
DIR %DATAFILE%. /B >>C:\BAT\%0A.BAT
GOTO RUN_IT_AGAIN
::
::Search the entire drive if file isn't in
::current directory
:SEARCHDRIVE
COPY C:\BAT\%0.DAT C:\BAT\DIRECTOR.BAT>NUL
CALL C:\BAT\DIRECTOR.BAT
GOTO RUN_IT_AGAIN
::
::DIR \%DATAFILE%. /A:-D /S /B >>C:\BAT\%0A.BAT
::
::Run the duplicate batch file to set the filename
:RUN_IT_AGAIN
CALL C:\BAT\%0A.BAT [SETFILE]
IF NOT "%FILENAME%"=="" %PROGRAM% %FILENAME%
::
:END
DEL DIRECTOR.BAT
DEL %0A.BAT
IF "%FILENAME%"=="" ECHO No file found.
IF "%FILENAME%"=="" PAUSE >NUL
:RESET
FOR %%A IN (PROGRAM FILENAME ORIG CMD DATAFILE)
  DO SET %%A=
::Set the filename
:SETFILE
SET FILENAME=
```

End

Before you type in the first listing, you might want to know about the program's one significant drawback: lack of speed. The time LOAD.BAT takes to find your file may vary widely, depending on its location on your hard drive and the size of your drive. The program has to build a data file containing a list of all your subdirectories, then search each subdirectory individually. If the file is buried deep in your directory structure, the batch file will take some time to find it.

How much time? On my system, LOAD.BAT found a file in my \BAT subdirectory in 29 seconds; on the other hand, it found a file in my \ZOO directory in 69 seconds. To mitigate the delays, I included a routine that first looks for the file in the current directory. If it finds the file, it sidesteps the file-find routine and runs the associated program immediately.

Note, too, that the last line of LOAD.BAT can't end with a carriage return.

Modifications

To adapt the program to your own needs, you'll have to make the following modifications:

- Change the lines in the COMPARE subroutine to include the extensions and program names you want. Note that I include the path with each program name. This isn't necessary if the program is in a subdirectory that's part of your PATH statement in AUTOEXEC.BAT.
- Change the default program for files with no extension in the NOEXTENSION subroutine.
- The batch file assumes that it and LOAD.DAT are in a subdirectory called \BAT. If you put them in a different directory, you'll need to change all the appropriate lines to match the new path. ■

Eric Maloney
Peterborough, NH

LOAD.DAT, a supporting data file for LOAD.BAT.

```
@ECHO OFF
GOTO :START
LOAD.DAT.....Directory processor for LOAD.BAT
:START
IF NOT "%2"=="" GOTO PROCESS
DIR /S /A:D C:\ | FIND "Directory">C:\BAT\DIRALL.DAT
ECHO EXIT>>C:\BAT\DIRALL.DAT
COMMAND <C:\BAT\DIRALL.DAT
C:\END.BAT
:PROCESS
CD %2
IF NOT "%2"=="C:\" SET SLASH=\
IF EXIST %DATAFILE% ECHO
  %2%SLASH%%DATAFILE%>>C:\BAT\LOADA.BAT
IF EXIST %DATAFILE% EXIT
```

End

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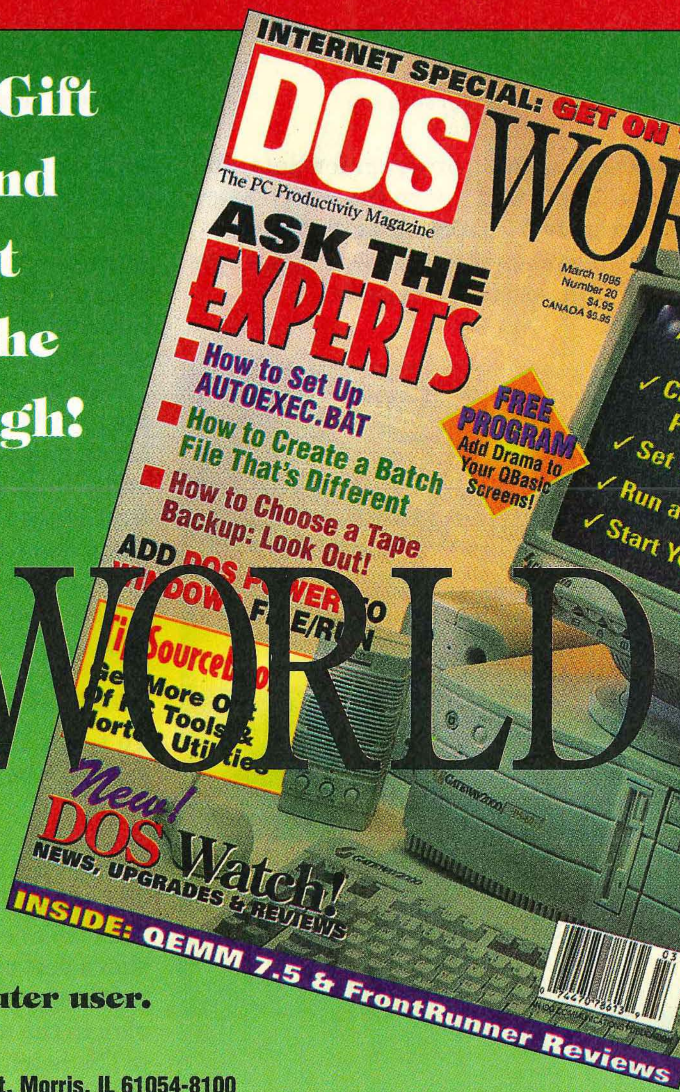

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DOS WORLD

DOS Program Hints and Tips

by Anne Fischer Lent and Stan Miastkowski

Whether you're a new user of the most popular DOS applications or an old hand, chances are you're not taking advantage of all your software can deliver. Every application has its neat tips, tricks, and shortcuts that can make your life easier, save keystokes, and (best of all) increase your productivity. But finding these time-and-effort savers isn't always easy. You might have been using a popular DOS program for years without realizing what gems lie hidden in seldom-used help files and manuals. Here are 24 hints that will show you how to get the most from your favorite DOS applications.

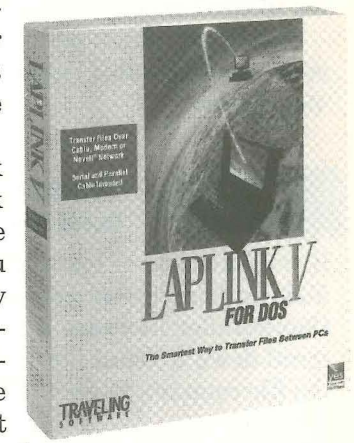
TIP #1

LapLink V for DOS: Easy Backups

LapLink's ability to transfer files from one PC to another makes it a handy tool for performing the essential—yet too-often-forgotten—chore of backing up your important data, especially if you don't have a tape-backup unit.

The most efficient way of backing up a hard disk is to copy its files to another hard disk, and LapLink sets up an easy connection between two PCs for that purpose. Even if the hard disk to which you're copying doesn't have enough space for a full PC-to-PC backup, LapLink lets you do a partial backup of your most critical files; you can create custom file sets on the source PC to copy to the backup.

One of LapLink's less widely known tricks is its role as a stand-alone backup program on a single PC; no need for a second machine. LapLink lets you use your PC's floppy-disk drive to back up your hard disk. You can use any of the program's features to create regular backup sets, or choose files by directory, date, or some other criterion.



When you use LapLink to back up your hard-disk drive to floppy disks, the program instructs you when to replace one floppy disk with another. LapLink also has distinct advantages over stand-alone backup programs: It doesn't split files between disks, and it doesn't use the DOS archive bit to determine which files have and haven't been backed up.

TIP #2

LapLink V for DOS: On a Big Screen Near You

LapLink V's built-in editor includes a little-known Large Type mode, which can come in handy in many situations. Although it displays fewer lines than standard type, Large Type mode is a great way to avoid eyestrain while using a portable computer with a small screen, or in dim light. If you're giving a speech, using Large Type mode on your portable PC can make your notes easily visible.

To try this technique out, just pull down the LapLink Editor's Utility menu and select the Turn Large Type On option. To return to the standard display, pull down the Utility menu again and select Turn Large Type Off.

Note that when Large Type is turned on, you'll also want to make sure you've set Word Wrap to At Screen Width; otherwise, part of your text will disappear off the right side of the display. Word Wrap is also found in the Utility menu.

---

*Anne Fischer Lent and Stan Miastkowski have a combined total of 30 years' experience covering personal computing, and have written numerous articles on using computers in the real world. You can reach them on the Internet at **alent@bix.com** and **stanm@bix.com**, respectively.*

TIP #3

LapLink V for DOS: Network Connections

You don't have to use LapLink's serial or parallel cable (or its remote-connection modem feature) to take advantage of the product's file-transfer abilities. Instead, you can accomplish the same task over Novell NetWare networks. Sharing files via LapLink is much easier than with the standard network method, where you have to first copy the files you want to share to a "public" directory on the network file server. Any PCs on the network with LapLink installed can share files with each other.

Except in one aspect—security—installing LapLink on networked PCs doesn't differ from installing it on standalone computers. When it's crucial to protect certain directories and files, the best way is to set up one or more directories designed specifically for sharing files; all others should be "private."

Details vary from network to network, so check with your administrator regarding security setup at your installation.

TIP #4

The Norton Commander: Quick Views

If you have lots of text files tucked away on your hard disk and can't remember what's what, The Norton Commander includes a handy feature that lets you scroll down a list of files in one window while viewing the file contents in another:

1. Make sure you have both the right and left view windows open.
2. Press F9 to show the pull-down menu, then pull down Right.
3. Select Quick View.
4. As you scroll down the files in the left window, the contents of each file will be shown in the right-hand window.

TIP #5

The Norton Commander: Find Files Fast

As hard disks get larger, more files get scattered around various directories. If you can't remember where your file is, The Norton Commander offers a powerful File Find feature that will locate your document in seconds.

Press Alt+F7 to pop up the File Find screen. Enter the name of the file you want. (You can use standard DOS wildcards, such as *.TXT or BUDGET.*.) As an option, you can further target the search by using the Containing field and entering a text string.

Find File will display a list of files matching your search criteria. Move the cursor to the one you want and press Enter. The display screen will move to the directory where the file is located; the file will be highlighted. Note that Find File seaches only the existing drive. If you have multiple drives and don't find the file on the first drive, use Find File's Change Drive option to search other drives.

TIP #6

Paradox 4.5 for DOS: Flexible Fields

When you're setting up your database in Paradox, the Field Type box on the setup screen shows five types of fields: A (alphanumeric), N (numeric), $ (currency), D (date), and M (memo). But Paradox also offers three other types of special-purpose fields not shown on screen:

- **S.** "Short numbers" are integers (whole numbers) between –32,767 and +32,767. You normally use them only in a huge database where space is at a premium, because they take up much less storage space than alphanumeric or numeric number fields. You can't use special formatting with short numbers or set up special entry options.
- **B.** Binary fields hold what Paradox calls "BLOBs" (binary large objects). These are usually graphics images or multimedia (video and sound) files.
- **U.** You can't create unknown fields manually; instead, Paradox creates them automatically when you import data the program doesn't recognize. Use the Borrow command (select it from the Restructure menu) to pass these fields to one of the standard Paradox field types.

TIP #7

Paradox 4.5 for DOS: Fuzzy Finds

All Paradox users are familiar with the Ask command, the heart of the program, which lets you create simple or complex queries for ferreting out material from databases. One not-so-widely known part of Ask is the Like operator, which lets you retrieve information from a Paradox table, even when you're not exactly sure what you're looking for. Using a so-called "fuzzy search engine," Like displays records similar to, but not necessarily the same as, a particular value.

Like is especially useful for extracting information when there are inconsistencies in spelling or case. Use Like just as you would any Ask operator. For example, entering `like buyers` in a Paradox query form will find *buyers*, *Buyers*, *buyer's*, and *Buyer's*.

You can also use Like when you're not sure how an entry is spelled. For example, if you have a customer in the capital of Saudi Arabia, you know it's pronounced "ree-yad," but you may not know the spelling. Entering `like riad` in the query form will find the entry (whose correct spelling is *Riyadh*).

TIP #8

Paradox 4.5 for DOS: Quick-Look Features

By default, Paradox stores and displays the data you've entered in a table format, which isn't always the easiest way to view or interpret it. To create custom reports and graphs without the hassle, Paradox offers two Instant commands that let you see your data quickly in a new light:

- Alt+F7 creates an instant report displaying the data arranged in the same order in which it appears in your table.
- Ctrl+F7 creates an instant bar graph of your numeric data. (Make sure you've moved first to a numeric field in your Paradox table.)

Note that many Paradox tables don't contain data conducive to instant graphing. Although the huge number of possibilities precludes listing general guidelines here, try using Ctrl+F7 and see what develops.

TIP #9

Quattro Pro 5.0 for DOS: Fast Sums

@SUM is the most-used function in spreadsheet work, and Quattro Pro has a quick way of summing a column of figures without requiring you to enter a formula:

1. Using your mouse, select (highlight) the column you want to sum, adding an extra blank cell for the sum at the bottom of the column.
2. Click on the SUM button located on the toolbar on the right side of the screen.

TIP #10

Quattro Pro 5.0 for DOS: Banner Days

Fitting data to print correctly is always one of the thorniest problems of designing spreadsheets. Quattro Pro offers several options that simplify the process. If your printer uses fanfold paper to produce continuous pages (as many dot-matrix models do, for example) instead of individual sheets, you can print across multiple pages, creating a banner:

1. Select Print.
2. Use the Block option to define the block of cells you want to print.
3. Select Layout; under Orientation, click on Banner.
4. Select Right from the Margins menu and enter the maximum width (in characters) of your spreadsheet. (It should be a larger value than for portrait or standard landscape printing.)
5. Select Page Length from the Margins menu and enter the number of lines per page. (It should be a smaller value than for portrait printing.)

Before you print, use Screen Previewer:

1. Select Quit to return to the Print menu.
2. Select Destination/Screen Preview.
3. Select Spreadsheet Print.

TIP #11

Quattro Pro 5.0 for DOS: Painless Xtraction

Quattro Pro offers two options for copying part of one spreadsheet to another. If you want to copy only the data in certain cells, highlight the block you want and select Edit/Copy. Open the spreadsheet into which you want to place the block, move to the top-left cell of the destination block, and press Enter.

For more involved copies, use Tools/Xtract. Unlike Edit/Copy, which copies only data, Xtract also saves the original spreadsheet's block names, named graphs, and defaults. Tools/Xtract offers two options: Formulas saves an exact copy of the block, including formulas, while Values converts formulas to their end values.

TIP #12

Quicken for DOS: Track Those Miles

If you travel extensively, you know both the joys and the pains of those ubiquitous frequent-flier programs. They pay dividends, but keeping track of them can be difficult. Here's how to use Quicken's investment accounts to track the miles and the rewards:

1. Create a mutual-fund investment account for each frequent-flier program you want to track. Create a new security named Airline Miles for each carrier and mark the display Open.
2. Using Ctrl+L, enter a ShrsIn transaction, security name Airline Miles, price 0 (zero), and number of miles under Shares. Record the transaction. Using zero as the price lets you keep track of your miles without affecting your net worth when running reports.
3. Enter a ShrsIn transaction for each trip taken, typing in the number of miles under Shares.
4. Ending Shares in the bottom-right corner of Register view shows the current total number of miles. The Shares column in any Portfolio view also displays current shares (equal to total mileage).
5. When airline statements arrive, compare them with your own records to determine whether the carrier has credited your account correctly.
6. When you use free mileage by cashing in frequent-flier coupons, enter a ShrsOut transaction, 0 (zero) for the price, and number of miles under Shares. This step deducts the number of miles from the Ending Shares field and displays your current mileage balance.

TIP #13

Quicken for DOS: Zooming Around

Quicken's QuickZoom feature is a handy way to focus in on the information you want to put into your reports. For example, in a summary report, QuickZoom gives you an itemized listing of the transactions included in the total for a specific category, or any total or subtotal shown on the report. This option can be helpful if a total is questionable, or if it's reported as Income: Other or Expense: Other (which indicate uncategorized transactions in the register).

To use QuickZoom in summary reports:

1. Highlight the amount in the summary report and press Ctrl+Z, which displays the transaction list.
2. Press Ctrl+P to print the list or highlight the desired transaction.
3. Press F9 for immediate access to the transaction in the register.
4. Make any desired modifications and press Ctrl+Z to return to the report.

To use QuickZoom in transaction reports:

1. Highlight any field on the transaction report and press Ctrl+Z to display the specific transaction in the register.
2. Make any desired modifications and press Ctrl+Z to return to the report.

TIP #14

XTree Gold for DOS: Now You See It, Now You Don't

If you share your PC with coworkers, you may have data, programs, and subdirectories you'd prefer to protect from prying eyes and accidental erasure. XTree Gold includes a Hide feature, which lets you mark entire directories so that they're concealed in DOS, even when XTree isn't running.

Move to the directory you want to hide, and, from XTree's Directory menu, select Hide/Unhide (or press Alt+H). The directory, which will still be visible from within XTree, will change from uppercase to lowercase letters to indicate that it won't show in DOS.

You can also set up XTree Gold so that hidden directories won't show within XTree. From DOS, type `XTG_CFG` while in the XTree Gold directory. If you enter the configuration program from within XTree, the Security section of the menu will be highlighted, and you won't have access to those options. Once you hide any directories, the only way to reveal them in XTree is to go back to the configuration program and choose to show hidden directories again. Then open XTree, highlight the hidden directory, and select Hide/Unhide from the Directory menu, or press Alt+H.

TIP #15

XTree Gold for DOS: Out in the Wash

Deleting a file on a floppy disk or hard disk doesn't actually erase the data; it just changes the first letter of the directory entry to a special character, telling DOS that the space taken up by the "deleted" file is available for other files. That's why "unerase" utilities, such as those found in The Norton Utilities and current versions of DOS, let you recover erased files.

If you want to make sure that no one can recover your data, though, XTree Gold includes a Wash utility that deletes those files for good by overwriting the area with other characters. (Note that Wash affects only deleted files; it doesn't harm your current data.) Here's how to Wash:

1. With the XTree Directory window active, pull down the Volume menu and select Wash Deleted Space. XTree then waits for confirmation to make sure you really want to Wash the disk.
2. Press F2 to toggle between single-pass and multiple-pass Washing, which overwrites the deleted area six times. Press Enter or click on OK to start the Wash process.

Note that once you've Washed a disk, you can't recover the data with Unerase; it's gone for good. In fact, Wash meets U.S. government standards for deleting classified data.

TIP #16

XTree Gold for DOS: Use Your Editor

By default, XTree uses its own built-in text editor (1Word) when you open text files. You can instruct XTree to use your favorite editor instead, though.

For example, let's say you want to use DOS' EDIT.COM. Enter the following command at the DOS prompt (if you want to make sure it's in effect during the current session) or put it into your AUTOEXEC.BAT file (if you want the change to be permanent):

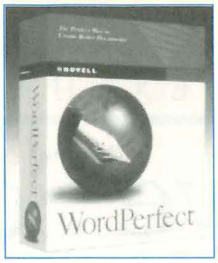
```
SET XTEDITOR=C:\DOS\EDIT.COM
```

If you want to use a different editor, just insert its pathname and command in the line above after the equal sign (replacing C:\DOS\EDIT.COM).

You may run into memory trouble, but there's an easy solution if you do. Use XTree Gold's Volume/Release command from the pull-down menu bar, or press the equivalent keyboard-command combination (Alt+R) to release some of your directories or subdirectories. They'll be relogged when you restart XTree Gold, or you can log them again manually after you've used the editor.

TIP #17

WordPerfect for DOS: Speeding Up Text Entry



Even if you're the fastest typist in the world, you can speed up your text entry. One way is to not worry about formatting until you've finished entering all the text. To do that in WordPerfect for DOS, select Text Mode from the View menu. When you're done entering text and are ready to format, select Graphics Mode from the View menu.

TIP #18

WordPerfect for DOS: Faster Text Blocking

To perform various editing operations, you often need to highlight sections of text. In WordPerfect, that's called *text blocking*.

Using the mouse is the quickest way to block large sections of text. While holding down the mouse button, drag across the first portion of the text you want to block. Go to the end of the text block, hold down the Shift key, and click the mouse button.

TIP #19

WordPerfect for DOS: Undoing Graphics Mistakes

In WordPerfect for DOS, you can perform a number of basic functions with imported graphics images. For example, you can move, resize, or crop an image. If you do something you don't like, however, you don't have to live with it. To undo mistakes easily, select Edit/Undo or press Ctrl+Z to go back to the image in its previous form.

TIP #20

WordPerfect for DOS: Simple Mail Merges

When you need to personalize form letters, only a mail merge will do. Inserting field names is simple with WordPerfect for DOS, but when you have to plug in the same field name repeatedly, you can speed up that tedious process by using a neat keyboard shortcut to insert fields.

After you've created the form file and selected the data file for field names, press Shift+F9, F, F5 to see the field list. If you need to use this keyboard shortcut often, save it as a macro.

TIP #21

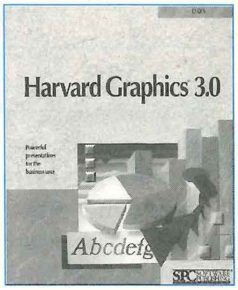
Harvard Graphics for DOS: Speed Up Plotter Output

Rather than waiting endlessly for output from your plotter while using Harvard Graphics version 3.x, you can take these steps to pick up the speed:

1. Disable the spooler by selecting Setup from the main menu, then selecting Plotter, and setting Use Spooler to No.
2. Reduce the size of the chart by using a frame background.
3. Choose a wide pen for the plotter by selecting Setup from the main menu. Select Plotter, then Options (F8).
4. Change Pen Width to Wide, then click on Continue (F10) twice and on Main Menu (F6).

TIP #22

Harvard Graphics for DOS: Garbage In, Garbage Out



If your output in Harvard Graphics version 3.x looks like junk, you can fix it by selecting the correct settings from Control Panel. Set Font Number to 0 (zero), PageLength to 60, and Orientation to Portrait.

TIP #23

Harvard Graphics for DOS: Tighten Up That Output

If you want dense, dark-looking patterns from your copy of Harvard Graphics (version 3.05 and later), try the following procedure:

1. Go to Setup from the main menu and select Program Defaults.
2. Tab to the field Dense Patterns and select Yes.

The switch will occur when printing to most non-PostScript printers, although it's not supported by plotters. And don't be alarmed when you don't see denser patterns in Print Preview. The improvement occurs only when you print.

TIP #24

Harvard Graphics for DOS: Scale the X or Y Axis

If you need to know minimum and maximum scaling for the X or Y axis in Harvard Graphics for DOS, try this trick:

- From the data form, press F8+Options and select Axis Options to show minimum and maximum axis values.
- When the values are numerical, the actual figures are shown on screen.
- If they're nonnumerical (months or days, for example), you'll see the data points from your data form corresponding to those nonnumerical values.
- To change the settings listed on screen, enter whatever values you prefer. ■

SHAREWARE EXCHANGE

Let's Have Some Serious Fun

by Hardin Brothers

My software falls into three categories: the essential, the useful, and the fun. Essential software is the set of programs on which I've come to depend. For example, I need a decent text editor, word processor, and file viewer to get my work done. Neither DOS nor Windows provides applications that meet my needs, so I turn to shareware and commercial software.

The useful category contains the programs I could live without, but would rather not. For example, I could use my hand-held calculator—if I could find it—but I find calculator programs very useful because they're always available.

> *A well-balanced shareware diet features programs you absolutely can't live without, some that are wonderfully practical, and others that are just plain entertaining.*

The fun category is self-explanatory. I admit to sometimes playing games, using multimedia, and surfing the Internet just because I enjoy doing so. I could easily get along without the fun programs, but I choose not to.

This month's shareware submissions span the entire range. We'll start with two essential programs, then look at one that fits into the useful category, and end with a program that can be either useful or just plain fun—depending on how you use it.

The programs discussed here are available from the *DOS World* bulletin-board system (603-924-3181), as well as from most information services and local BBSes. (See the accompanying sidebar, "Share the Wealth," opposite, and the "*DOS World* BBS" section of "How to Use This Magazine," page 64 in this issue, for details on accessing the bulletin board. Registration fees are listed in the "Product Information" box, page 25.)

A Gem of a File Lister

*I'm enclosing my favorite and most indispensable shareware program: Vernon Buerg's **LIST.COM**. A friend helped me set up my first XT in 1986 and added LIST.COM to it. Over the years, I've relied on it for everything it does, except the phone dialer. The only problem I've found is that LIST and FV don't seem to work together correctly when I want to view the contents of a ZIP file on CD-ROM.*

Harry J. Geiser
Orrville, Ohio

I've also installed one version or another of LIST.COM on every PC-compatible computer I've owned, and on many I've set up for others. It used to be an indispensable utility for me, until I started using 4DOS with its internal List command. But I still start Buerg's LIST.COM from time to time to perform special tasks. In fact, I was surprised that this program hadn't been nominated before, because it's a perennial favorite.

LIST.COM is undoubtedly the most widely known file lister in the DOS world. Do you use TYPE, with or without MORE, to view a file? Do you wish you could read the help screens in EXE and COM files? Do you use EDIT.COM just to scroll up and down while viewing a file? If so, you need LIST.COM.

When you download LIST91C.ZIP (the current version) and unzip it, you'll find five executable programs. There are three versions of LIST.COM; you pick the one you want based on the amount of memory you're willing to let it use and the features you want to have. Of the two other programs, FV is the more interesting. It lets you view information about the files in a compressed archive (ARC, ARJ, ZIP, PAK, DWC, LZH, ZOO, or LBF format). One version of LIST.COM also uses FV to display the names of files contained in archives. The other auxiliary program, ARCE, extracts files from the once-popular ARC archive format, but that's rarely found anymore. If you occasionally come across an ARC file, you should have a copy of ARCE around.

But the real star of the show is LIST.COM. With it, you can view a file in several different formats, including ASCII and hexadecimal. You can also scroll back and forth in the file, print all or part of the file, copy all or part to a new file, and search for text. You can select files to view from the command line or from a simple internal file manager.

You can set up LIST.COM almost any way you want, from changing its colors to reassigning its key commands. And, yes, it can even read phone numbers and use your modem to dial them for you.

Best of all, LIST.COM isn't hampered by the file-size limitations that make DOS's EDIT.COM and Windows' Notepad such wimps. LIST.COM can handle files of up to 16MB in ASCII mode, or up to 4MB in hex mode.

I've never had any difficulty with LIST.COM, except the problem Geiser has found: LIST has trouble starting FV on a CD-ROM drive. But that's minor compared with its strengths. If you haven't tried LIST.COM, you can't call yourself an experienced shareware user.

Bonkers Over Bingo

The real reason I wrote—other than to tell you that I like your magazine—is to offer something you seem to need: a real text editor.

Your Favorite Shareware Utilities disk contains a program called Boxer. Along with its competition, including QEdit, Boxer is fine for those who need something just a little more powerful than DOS's EDIT.COM. But when you need real power, these programs just won't do.

***Bingo 4.00** (okay, so it's a stupid name) is one of the best text editors ever produced, commercial or shareware. It has a minimalist appearance, but it's loaded with features. You can set up the entire program, including its menus, to look exactly the way you want.*

Anything you could possibly imagine you'd ever need is probably already present. Bingo includes a macro language to ease repetitive tasks, as well as its own programming language, which lets you add features to the editor itself. This one has it all.

Jim Wilson
Oxford, New Jersey

SHARE THE WEALTH

Our "Shareware Exchange" column invites you to send a copy of your favorite shareware program, along with a description and an explanation of why you like it (no more than 500 words) to Shareware Editor, *DOS World*, 86 Elm Street, Peterborough, NH 03458. Tell us how we can obtain a copy of the program. We'll pay contributors $50 for each program featured here. Please don't send us shareware you've written yourself—we prefer recommendations from users, not authors.

Contact us on CompuServe at **75300,2361**; on the Internet at **75300.2361@compuserve.com** or **editors@iway.mv.com**; or on the *DOS World* BBS at **603-924-3181**. All programs featured in "Shareware Exchange" are available by modem from the *DOS World* BBS (instructions on page 64). LIST.COM (LIST91C.ZIP), Bingo (BE400.ZIP), Graphic Workshop (GRFWRK.ZIP), and Units (UNITS.ZIP) are in File Area 5. In addition, most of the programs described in "Shareware Exchange" can be found on major on-line services and local BBSes.

—Eds.

I've written about several text editors—Boxer, QEdit, and Aurora, to name a few—and generally liked them all. But Wilson is correct about Bingo. It is, by far, the most powerful text editor I've tried.

If DOS's EDIT.COM (which is also part of QBasic) and Windows' Notepad define the extent of your experience with text editors, you're in for a surprise. A good text editor makes creating text, writing program code, and editing AUTOEXEC.BAT, CONFIG.SYS, or INI files a breeze. And a program like Bingo (if there's really any other program like it) gives you all the power you could ever want.

Bingo can edit virtually any text file you'll ever find. Its upper length limit is more than 200MB. It uses conventional memory, EMS, XMS, and hard-disk space for virtual memory as needed.

Bingo also lets you define keystroke commands and menus to mimic other editors, plus almost any macro command you could imagine. Do you want Bingo to act like WordStar or WordPerfect? No problem. How about using the keystroke commands in Boxer or Brief (a commercial text editor from Borland International)? Again, that's easy. And if that isn't enough, you can use Bingo's C-like programming language to make it jump through any hoop you can think of.

Bingo offers multiple editing windows, can edit multiple files at once, and can run macros and program commands, including search and replace, either on the current file and window or on all open files. It even includes a powerful source-code coloring system (written in its programming language) that makes programming in C, C++, batch language, assembly language, and dBase much, much easier. The author promises source-code coloring for Basic and Pascal "soon," or you can write your own version based on the code he uses for currently supported languages.

Of course, Bingo supports screens that are larger than the standard 25 by 80. How about 60 by 132 on many VGA cards? To give you an idea of Bingo's breadth of features, you can select among four kinds of backspace and deletion.

Bingo is aimed at programmers and others who spend most of their computing time working with text files. And it does take some time to learn and set up, especially because its documentation mixes simple and complex ideas freely and expects you to understand them all.

But if you want powerful text editing and haven't already settled on a program, or if you wish your current program were more powerful, try Bingo. And if you find something that it can't do, other than use fancy fonts and insert graphics into text, I'd like to know. Bingo may be the most powerful text editor ever written.

DOS TIP

A GREAT FIND

When you need a particular file on your hard drive, and you're not sure in which directory it's located, you have several options for finding it. You may type this command at the DOS prompt, for example:

```
DIR \filename.ext /S /B
```

You may also run DOS's diagnostic program, MSD.EXE, and use its File Find option. But I prefer a third alternative: the ATTRIB command. Because it finds files *and* tells you which of their attributes are set, you know right away whether a file is designated as read-only or hidden.To use ATTRIB to find files, type a command such as the following:

```
ATTRIB \filename.ext /S
```

Substitute the name of a file or a wildcard sequence (for example, *.DOC or JAN??.WKS) for *filename.ext.*

As with the DIR command above, the backslash (\) ensures that the search starts at the root directory; the /S switch tells DOS to search all subdirectories. (DIR's /B switch has the effect of producing a condensed list of matches. Without this switch, DOS organizes matches under subdirectory headings.)

Whether you use DIR, MSD.EXE's File Find, or ATTRIB, DOS provides the complete path to the files matching your search criteria.

—Pete Moyer

Image Is Everything

Graphic Workshop for DOS *is an excellent graphics utility program. It concentrates on tasks that image editors don't perform well. It supports all video types and most bit-mapped image formats.*

The features I find most useful are Graphic Workshop's scaling and conversion options. Scaling lets you change horizontal and vertical size without losing details, and converts changes from one image format to another, including EXE *files, which make a picture executable.*

Ed Farias
Cochise, Arizona

LIST.COM and BINGO fall into the essential category, at least on my computer. Graphic Workshop (GWS) is useful but not essential, because I don't work with images very often. But if you do, you may wind up calling it "must have" shareware.

You can use GWS to view files in 19 bit-mapped formats, ranging from ART to WPG. The most common formats it supports are BMP, GIF, PCX, RLE, JPG, and TIF. (Download the program for a complete list.)

But GWS is much more than a file viewer. GWS can read an image in one format and convert it to another (a fairly common task), plus it can print and dither images, transform them by rotating and flipping, then scale, crop, or reverse them (white to black and black to white, or colors to their complements), and, finally, create catalogs.

Available special effects in Graphic Workshop for DOS include color reduction and promotion, changing color images to gray scale, sharpening and softening, smudging, and posterizing.

If that isn't enough to whet your appetite, GWS is also very fast. Once you've told it what to do, it can usually apply the effect you want and create a new image in seconds. And GWS supports a wide variety of Super VGA cards, so that you can view images that are too large or include too many colors for a standard VGA.

That's the good news. The bad news, if there is any, is that GWS applies most of its effects to an entire file. It displays an image with its view and crop functions (which let you select the rectangular crop area with the cursor keys). But most of the time, it simply reads and manipulates images without displaying them, saving the results in a new file with a name that GWS makes up on its own.

To see the results, you have to view the output file. Some commercial graphics-manipulation programs let you apply the same effects to portions of an image, then see the results before you save them to a new file.

But perhaps that's a silly complaint for a program that does so much and costs so little. And if you like GWS, it's only one of almost a dozen shareware graphics programs from Alchemy Mindworks, most of which run under Windows. A full list of the programs available is included in the GWS documentation, which is reasonably good.

If you work with graphics and haven't yet bought a high-end image-manipulation program, give Graphics Workshop a try. It starts where most drawing and painting programs leave off, and makes a great tool for your graphics arsenal.

A Powerful Conversion Experience

Some time ago, I was shopping in my favorite bookstore and came across the shareware program ***Units****. It's an excellent program for those of us who have to convert data from the laboratory to full-scale designs.*

Faz Kahrom
Stockholm, Sweden

Units fulfills one of my prime criteria for shareware programs: It does one thing very well and very easily. If you want to convert between almost any two units of measure, this program can probably do it for you. And it will have your answer almost as quickly as you can type.

When you start Units, you're faced with 48 categories of measurement, ranging from simple ones, such as length and area, to the truly unusual, such as density of heat-flow rate (whatever that is). Move the cursor bar to the category you want, then press Enter. You'll see a list of measures for your chosen category, which again range from the everyday (inches and meters) to the off-the-beaten-track (bolt, ell, and perch). Some lists are longer than the screen, so you'll have to scroll through them.

Move the scroll bar to one measure and type in a number or an expression; Units includes a simple calculator. As soon as you press Enter, the software converts your measure to every other unit in the category. Three pints, for example, is immediately translated into six cups and 1.5 quarts, as well as 384 drams and 0.625 pottles.

By pressing function keys, you can switch the display to three decimal points of accuracy or to 20 significant digits in scientific notation.

Okay, so I really have no reason to know that 1 foot-lambert is equal to 10,763.910 skots. But I do sometimes have to convert lengths, weights, volumes, and areas when I'm designing a piece of furniture in my wood shop or multiplying a recipe in the kitchen. And this nifty little program can do both with ease and grace.

For me, Units falls somewhere between useful and fun. And, best of all, it lets me spend hours just wondering why all those arcane measurements were ever invented. ■

Technical Editor Hardin Brothers has been working with computers and writing about them for 15 years.

PRODUCT INFORMATION

Prices listed are for registration only. Vendors may charge additional small fees for shipping and handling, extra disk copies, and printed documentation.

LIST 9.1c, $20
Buerg Software
139 White Oak Circle
Petaluma, CA 94952

Bingo 4.00, $40
Sunderland Software
P.O. Box 2563
Columbia, MD 21045

Graphic Workshop for DOS 9.0b, $40
Alchemy Mindworks Inc.
P.O. Box 500
Beeton, Ontario L0G 1A0
Canada

Units 5.1, $20
Lars Josefsson
Kartvägen 17
S-175 46 Järfälla
Sweden

DOS TIP

USING NULL TO AVOID REFORMATTING

You probably know that one of the easiest ways to protect against accidentally reformatting your hard disk is to use the LABEL command to give the disk a volume label. When you do that, FORMAT asks you to type the volume label before it will format the disk.

For added security, I recommend including a null character (ASCII 255) as part of the volume label; hold down the Alt key and type 255 on the numeric keypad. Although this character looks like an ordinary space, it isn't. DOS won't format the disk unless you include the null character when you type the disk's label.

—Ken Johnson

INTRODUCING THE NEWEST DOS

Inside "DOS 7"

DOS diehards are in for a rude awakening. Stripped of several commands and plagued with new quirks, the newest version of DOS is hardly an upgrade at all.

by Eric Maloney

Lost in most of the talk about Windows 95 is the fact that Microsoft's latest wunderkind comes with a new version of DOS. But if you're a DOS diehard, don't expect any significant improvements. Microsoft has stripped DOS of several popular commands and has introduced quirks that could very well drive you crazy.

"DOS 7," as computer journalists and the popular press have termed it, isn't an upgrade, at least not as we've come to think of upgrades. In fact, it's more like a downgrade. Although a new version usually means more, in this case it means less. DOS 7 includes only about 60 percent of the programs that come with DOS 6.0 or 6.2. Among the missing are DOS 7 versions of QBASIC, HELP, UNDELETE, DOSSHELL, and BACKUP. Only a few DOS programs have been enhanced, and the three new DOS commands exist only to accommodate Windows 95 features.

Then there's the problem of long filenames. Gone is the 8.3 limit—but long filenames are useful only if you never leave Windows 95, and if you use Windows 95 programs exclusively, and if all your friends and colleagues also use Windows 95. Once you start giving files to people using DOS 6.x or Windows 3.1 programs, long filenames are nothing but trouble.

Of course, it depends on the particular mode—of Windows 95's three DOS modes—in which you're working. That's right; it's not just a single DOS anymore. It's DOS 7a, 7b, and 7c—and they're not alike. Some DOS switches have different functions, depending on the mode you're using. At least one command includes switches that exist in two of the modes but not in the third. And two of the modes don't support long filenames. Confused yet? Let's field a few questions and see whether we can clarify some of the more important issues.

So just exactly how much DOS does Windows 95 give me?

Microsoft provides DOS 7 versions of many DOS 6 commands, which it puts into a Windows 95 subdirectory called \COMMAND. (See "What's In, What's Out," opposite, for a list.) With a few exceptions, these commands walk, quack, and fly like their DOS 6 counterparts.

Originally, the programs that Microsoft didn't include with DOS 7 were simply gone. In response to concerned Windows 95 beta users, however, Microsoft decided to throw in a few of the more popular DOS 6 programs, including QBasic, Help, and Print.

These programs don't just look like DOS 6 programs; they *are* DOS 6 programs, right down to the file sizes. You install these programs with a batch file; Windows places them in the DOS 7 subdirectory, \COMMAND. A handful of programs, most notably DOSSHELL, aren't included in Windows 95 in either DOS 6 or DOS 7 versions.

Do I need to install these DOS 6 programs from my Windows 95 disk if I still have my original DOS 6 versions?

No; you can use your current versions. But you must use SETVER to add GRAPHICS, INTERSVR, PRINT, REPLACE, and TREE to your version table. (INSTSUPP.BAT, the batch file that installs these programs from your Windows 95 disks, updates the version table automatically.)

Also, you'll probably want to move or copy the files to your \COMMAND subdirectory. Either that, or make sure that your old DOS directory is in your new PATH.

Editor at Large Eric Maloney is the founding editor of PC Resource *and the former editor in chief of* 80 Micro *and* LAN Technology *magazines. He's currently adjunct professor of journalism at the University of New Hampshire/Keene.*

What about programs that aren't provided in either DOS 6 or DOS 7 versions?

The sidebar "What's In, What's Out" lists several programs that Microsoft has excluded entirely but that still work. The most notable is DOSSHELL. You'll have to save these files from your old DOS 6 subdirectory or pull them from your original DOS 6 installation disks.

Do all DOS 6 programs work under DOS 7 the way they're supposed to?

For the most part, yes—with a few caveats:

- If you run your DOS 6 version of EDIT.COM, QBasic must be available. (Note, however, that EDIT.COM's new, standalone version includes a few extra features and runs under DOS 6.)
- Help continues to provide information for DOS 6 only. If you want help with DOS 7 commands, you'll need to use the /? switch. (For example, you'd type `XCOPY /?`.)
- Undelete is another matter entirely. It works—but you have to use it in combination with a couple of new commands: LOCK and UNLOCK. Otherwise, your system will crash. (More on the UNDELETE command later.)

Is there any reason to keep my DOS 6 programs that don't run under DOS 7?

Yes—in case you want to run your old version of DOS.

Why would I want to do that?

Because Windows 95 isn't going to be a stable product in its first incarnation. (Nothing against Windows 95, but that's just the way new software is.) Also, you have no guarantee that all your DOS 6 (and Windows 3.1) programs run under Windows 95.

Switching between operating systems might be inconvenient, but it's better than not having an important program available to you when you need it.

Even if you have no problems with your new DOS and Windows, knowing that your old DOS is available will give you a measure of security.

How do I run DOS 6 from Windows 95?

You don't. You set up your system so that you can boot to either DOS 6 or Windows 95. This is a simple procedure. In fact, if you install Windows 95 in a new directory, your system sets up a dual-boot option automatically.

When you turn your computer on, it tests itself to make sure everything is running properly and then beeps. Press F4 after the beep and your computer loads your previous version of DOS. Alternatively, you can press F8 and get a menu that includes a "Boot to previous DOS" option.

If your machine isn't set up for dual booting, add the following line to the Windows 95 setup file, MSDOS.SYS, under the options heading:

```
BootMulti=1
```

Unlike earlier versions of MSDOS.SYS, this one's a text file that looks a lot like a Windows INI file.

Windows 95's dual-boot option is possible because Windows renames rather than deletes your DOS 6 system and setup files (MSDOS.SYS, IO.SYS, CONFIG.SYS, COMMAND.COM, and AUTOEXEC.BAT). When you choose to boot to DOS 6, Windows 95 swaps files, tucking the Windows 95 system files in a corner and reinstating the DOS 6 files.

When you run DOS 6, your system contains no trace of Windows 95; it's as though the newer operat-

WHAT'S IN, WHAT'S OUT

DOS 7 comes with these upgraded programs and internal commands:

ATTRIB.EXE
CHKDSK.EXE
CHOICE.COM
DEBUG.EXE
DEFRAG.EXE
DELTREE.EXE
DISKCOPY.COM
DOSKEY.COM
DRVSPACE.EXE
EDIT.COM
EMM386.EXE
FC.EXE
FDISK.EXE
FIND.EXE
FORMAT.COM
KEYB.COM
LABEL.EXE
MEM.EXE
MODE.COM
MORE.COM
MOVE.EXE
MSCDEX.EXE
NLSFUNC.EXE
SCANDISK.EXE
SETVER.EXE
SHARE.EXE
SMARTDRV.EXE
SORT.EXE
START.EXE
SUBST.EXE
SYS.COM
XCOPY.EXE

DOS 7 comes with the following new programs and internal commands:

LOCK
UNLOCK
START

The following DOS 6 commands on the Windows 95 disk run as is:

APPEND.EXE
EXPAND.EXE
HELP.COM
INTERLNK.EXE
LOADFIX.COM
MEMMAKER.EXE
MSBACKUP.EXE
QBASIC.EXE
RESTORE.EXE
SIZER.EXE

You must install these DOS 6 commands by running INSTSUPP.BAT:

GRAPHICS.COM
INTERSVR.EXE
PRINT.EXE
REPLACE.EXE
TREE.COM

You must lock your drive before using this DOS 6 command:

UNDELETE.EXE

The following programs aren't provided in any version in Windows 95:

BACKUP.EXE
DISKCOMP.EXE
DOSSHELL.EXE
FASTHELP.EXE
FASTOPEN.EXE
MSAV.EXE
MSD.EXE
POWER.EXE

ing system doesn't exist. As we'll see when we talk about long filenames, though, the work you do in DOS 6 can affect your Windows 95 operations.

What if I have two DOS directories, one for DOS 7 and one for DOS 6? How does DOS 7 know which one to use?

During setup, Windows 95 automatically renames all pathnames in CONFIG.SYS and AUTOEXEC.BAT so that they point to the DOS 7 subdirectory, \COMMAND. For example, if your DOS 6 AUTOEXEC.BAT file includes this line:

```
C:\DOS\DOSKEY
```

then your DOS 7 AUTOEXEC.BAT file includes this line:

```
C:\WINDOWS\COMMAND\DOSKEY
```

Also, Windows 95 inserts the C:\WINDOWS\COMMAND pathname into your PATH statement, before the C:\DOS pathname. If you've got duplicate programs in your \COMMAND and DOS 6 directories, DOS will find the former one first. When you boot to DOS 6, your original pathnames are intact and Windows 95's subdirectories excluded.

Enough about DOS 6. What does DOS 7 look like?

Pretty much like DOS 6. Because it borrows the settings from your DOS 6 configuration files, you won't notice much difference, except when using certain commands that function a bit differently under DOS 7.

This might be a good time to digress for a moment and talk about what we mean when we say "DOS 7." As noted above, Windows 95 includes three DOS modes. It's important to understand them, because some DOS 7 commands work differently in different modes and at least one command exists in only two of the three modes.

I call the first one standalone mode. Here, DOS runs completely free of Windows. You start your computer and up pops the familiar command prompt, offering the look, feel, and services of DOS 6.

In fact, you can even use FORMAT /S to create a DOS system disk containing—surprise!—COMMAND.COM, IO.SYS, and MSDOS.SYS, and you can use that system disk to put DOS 7 on a hard drive. You have to tweak the hard drive to get DOS 7 to run smoothly, but it can be done.

In other words, it's quite possible to dump all Windows 95 files, except for the system and DOS files, and go about your business as usual. (Why you'd want to do that is another question.)

The second mode is the DOS session, which you open as you do under Windows 3.x, by either clicking on the MS-DOS Prompt icon or running COMMAND.COM. This DOS differs from standalone DOS in several important ways:

- It supports Windows 95's long filenames. This is most apparent when you list a directory, which gives you both the short name (called an *alias* in Windows 95 parlance) and the long one for each file. A typical directory listing will look something like the one shown in the first box (below).

SAMPLE WINDOWS 95 DIRECTORY LISTING

```
Volume in drive C is VOL10-03-93
Volume Serial Number is 1E78-86B7
Directory of C:\CHICAGO\Desktop

.                      <DIR>               04-11-95   9:57p  .
..                     <DIR>               04-11-95   9:57p  ..
WINDOW~1    LNK                    268     04-12-95   9:22a  Windows 95 Beta Release Notes.lnk
MICROS~1    LNK                    271     04-12-95   9:21a  Microsoft WinNews.lnk
MYBRIE~1               <DIR>               04-12-95   8:55a  My Briefcase
MVPS                   <DIR>               04-11-95  10:09p  MVPs
README      TXT                 84,364     04-11-95   8:39p  README.TXT

     3 file(s)     84,903 bytes
     4 dir(s)   97,796,096 bytes free
```

- Some commands run differently from the way they do in standalone mode. For example, XCOPY adds an array of extra switches, and DIR extends its wildcard services. We'll take a closer look at these enhancements later.

- You can run a Windows program directly from the command line, either by typing the program's filename or using a new command called START. For example, either of these commands will run Word for Windows:

```
WINWORD
START WINWORD
```

Third, Windows 95 also includes something called real mode, designed specifically for DOS programs that require all your computer's resources. You can change a DOS program's properties so that it automatically runs in real mode, or you can shut down Windows and go to a real-mode DOS prompt.

In either case, Windows closes all other programs, closes itself, and takes you to the command line. When you're done, type `EXIT` and Windows reboots your system.

What's in DOS 7 (and what's not)?

Windows 95 replaces more than two dozen DOS 6 programs with its own versions. In general, the most significant change is that DOS 7 programs support long filenames.

For example, typing `EDIT "sales promotion, fall.doc"` will run DOS 7's EDIT.COM and load the file SALES PROMOTION, FALL.DOC. (See the sidebar "Beware of Long Filenames," right, for details on the perils and pitfalls of this major alteration in Windows.)

In addition, the following commands have received some fine-tuning and enhancements:

- **DIR.** The DIR command now offers a Verbose switch (/V), which gives you different information depending on whether you're running standalone DOS or are in a DOS window. In the former case, DIR /V gives you a listing like the one

BEWARE OF LONG FILENAMES

Any program written for Windows 95 lets you create filenames that are up to 255 characters long. You can use DOS 7 commands with long filenames, as long as you put the filenames in quotation marks.

For example, to rename the file My Document as My Report, type the following command:

```
REN "My Document" "My Report"
```

To create a file called My Document with COPY CON, type the following:

```
COPY CON "My Document"
```

In both examples, the last set of quotation marks is optional.

Windows 95 and DOS 7 display your filenames in the case in which you typed them. Filenames aren't case sensitive, though, when you use them with DOS commands.

You'll notice that My Document contains a space. Long filenames can also include periods (.), plus signs (+), commas(,), semicolons (;), equal signs (=), and brackets ([ ]).

It's Not Nice to Share

What happens if someone with an earlier version of DOS tries to use a file with a long filename?

Earlier versions of DOS, as well as programs not written for Windows 95, can't recognize long filenames. Windows 95 tries to circumvent this incompatibility by converting every long filename to a fake 8.3 filename called an *alias*.

For example, if you save a document as My Document, Windows 95 gives it the alias MYDOCU~1.DOC. Older operating systems and programs use this alias as the filename.

Aliases have the potential to cause severe migraines if you share files with people who use, say, DOS 6 and Windows 3.1. For example, let's say you give a series of documents these filenames:

```
Expense report-Jane-May.doc
Expense report-Bob-June.doc
Expense report-Bob-July.doc
Expense report-Jane-August.doc
```

A DOS 6 user will see these filenames instead:

```
EXPENS~1.DOC
EXPENS~2.DOC
EXPENS~3.DOC
EXPENS~4.DOC
```

Also, any characters that aren't valid in a DOS 6 filename are either deleted or converted to underlines. For example, this long filename:

```
++JUNE REPORTS++
```

becomes this short filename:

```
__JUNE~1
```

Once Is Enough

Aliases are confusing enough, but things really get weird when you start dealing with duplicate aliases.

For example, Word for Windows automatically gives a backup file the long filename Backup of *filename*.wbk. This translates into the alias BACKUP~1.WBK.

If you have many subdirectories with backup files, you might end up with several files named BACKUP~1.WBK, BACKUP~2.WBK, BACKUP~3.WBK, and so forth.

If you copy one set of backup files to a floppy or to another subdirectory and then copy a second set to the same floppy or subdirectory, Windows 95 renames the second set sequentially. That is, the second BACKUP~1.WBK becomes BACKUP~4.WBK, the second BACKUP~2.WBK becomes BACKUP~5-.WBK, and so on. Confusing, to say the least.

—E.M.

DIRECTORY LISTING USING THE /V SWITCH IN STANDALONE DOS MODE

File Name	Size	Allocated	Modified	Accessed	Attrib
NONSENSE DOC	2,975	8,192	03-10-95, 8:58p	03-23-95	A

DIRECTORY LISTING USING THE /V SWITCH IN DOS WINDOW

File Name	Size	Allocated	Modified	Accessed	Attrib	
NONSENSE DOC	2,975	8,192	03-10-95, 8:58p	03-23-95	A	NONSENSE.DOC

shown in the second box (above, top). In the latter case, DIR /V gives you a listing like the one shown in the third box (above). The second NONSENSE.DOC is the long filename.

In addition, the /B switch works differently in a DOS window from the way it does either in standalone DOS or in DOS 6: It gives you long filenames instead of short ones.

How this will affect batch files that use DIR /B is hard to predict, but, obviously, it will have some impact, because the short and long filenames will be different.

For example, if you create a file called THISISNONSENSE.DOC, the short filename—and the one previous versions of DOS will recognize—is THISIS~1.DOC.

- **DIR, part 2.** When you're in a DOS window, DIR features an expanded set of wildcards. Most notably, you can use the * wildcard in the middle of a filename.

For example, in DOS 6 and standalone DOS 7, if you type the following command:

```
DIR P*R*O*
```

you get a list of all files beginning with *P*, such as the following:

```
PSP      <DIR>   09-21-93  12:03p
PCTOOLS <DIR>    12-28-93  11:27a
PROGRA~1<DIR>    04-11-95   8:48p
PERSONAL <DIR>   05-08-94   7:25p
```

But if you're running DOS in a window, you get all files containing the letters PRO in sequence:

```
PROGRA~1  <DIR> 04-11-95 8:48p Program Files
PERSONAL  <DIR> 05-08-94 7:25p PERSONAL
```

Also, DOS 7 lets you search for a long filename by putting quotes around it. For example, to find the file called Program Files, type the following line:

```
DIR "*files"
```

- **Rename (REN).** The REN command now lets you rename subdirectories as well as files. To rename long filenames, put quotes around them. For example, to rename REPRTMAY.TXT as Report for MAY.TXT, type the following:

```
REN "REPORTMAY.TXT" "Report for MAY.TXT"
```

You use the same rules to rename subdirectories as you do files.

- **CHDIR (CD):** You can now use multiple periods after CD to move up several subdirectory levels.

For example, if you're in the subdirectory REPORTS\1995\BUDGETS, the following command will move you to the REPORTS subdirectory:

```
CD...
```

- **DOSKEY.** DOSKEY comes with four new switches. The most useful is /FILE:*file*, which lets you load a list of macros from a file. For example, you can put your macros into a file called DKMACROS.TXT and load them with the switch /FILE:DKMACROS.TXT.

Other switches let you suppress or show macro expansion, set the size of your type-ahead buffer, and set the length of a command-line string.

- **EDIT.** EDIT.COM is now a standalone program that doesn't require QBasic. Its most important improvement is that it lets you open several documents at once. The menu bar includes a View command you can use to split, size, or close windows.

- **XCOPY32 (XCOPY):** Windows 95 comes with a new XCOPY called XCOPY32. (Actually, the \COMMAND subdirectory includes a file called XCOPY.EXE, but its only function is to load XCOPY32.)

In standalone and real-mode DOS, XCOPY32 works the same as DOS 6's XCOPY. (The /Y switch isn't listed in the on-line help, but it's there nonetheless.)

In a DOS box, XCOPY32 comes with a variety of new switches. Several are strictly cosmetic, suppressing or showing various information as XCOPY32 copies. Among the rest, several give you more choices of what you can copy and how.

For example, /I lets you specify a nonexistent destination directory;

if you're copying more than one file, DOS creates the subdirectory for you. /H copies hidden and system files; /R overwrites read-only files.

What are the new DOS 7 commands?

Windows 95 comes with three new DOS commands: START, LOCK, and UNLOCK.

START starts a Windows program. For example, if you type this at the DOS prompt:

```
START WINWORD
```

Windows 95 loads Word for Windows. This command works only in a DOS session under Windows 95.

LOCK and UNLOCK are internal commands designed to protect data and filenames from disk utilities that access your hard drive directly. By default, Windows 95 unlocks your drive, which means that direct disk access is disabled.

In practical terms, an unlocked drive prevents you from using older disk utilities, including Undelete. To use one of these utilities, you must first lock the drive. Windows 95 warns you, however, that you risk corrupting filenames and data.

Besides long filenames, what other incompatibilities should I watch for?

It depends on how extensively you use DOS. If you still use a number of batch files and depend on DOS for file-management tasks, you'll probably run into a few problems. Here are a few glitches we've already encountered:

- **DIR /B.** Used in a batch file, DIR /B may give you unexpected results in a DOS session. Some batch files use DIR /B to create a file made up of a list of filenames. The batch file then processes the files in the list. But, in DOS 7, the /B switch produces a list of long filenames. If you try to process the long filename without quotation marks (for example, DEL *long filename*), you'll get an error message.

- **FOR-IN-DO slash.** Recent articles in *DOS World* have described how to use the slash in the set of a FOR-IN-DO statement to parse text. This technique doesn't work under DOS 7, which sees the slash as just another character instead of as an escape code.

- **Undelete.** Although Microsoft provides the DOS 6 version of Undelete in DOS 7, it does everything possible to discourage you from using it. For starters, you can use it only in standalone or real mode. If you try to use Undelete in a DOS session, Windows 95 forces you to shut down Windows and go to real mode. Also, you must lock your hard drive before you undelete the file. (Type `LOCK` at the command prompt.) Otherwise, Undelete freezes your system and you have to reboot.

- **Filename corruption.** Watch out for older file-management utilities, such as third-party move and copy programs. They may seem to work fine, but they don't recognize long filenames—and in some cases will destroy them.

So what's the bottom line?

If you're a casual DOS user and utilize only a few basic DOS commands, you shouldn't notice much difference running DOS 7. If you're a DOS rat with subdirectories full of exotic batch files, though, watch out. Windows 95 won't readily forgive your transgressions, and you'll ultimately have to make concessions. Either that, or hope that Microsoft resolves the problems in DOS 8. ■

DOS TIP

MOVE OVER, PLEASE

By default, most text editors, including DOS's own EDIT.COM and QBasic's editor, work in insert mode. When you type in characters, they're added at the cursor's location. Unfortunately, DOSKEY breaks with convention, defaulting to type-over mode; if you're creating a DOSKEY macro and omit a letter, you must retype the line from the point where you made the mistake.

If you'd prefer DOSKEY to work in insert mode, follow these steps. If you don't already call ANSI.SYS at start-up, add this line to your CONFIG.SYS file:

```
DEVICE=C:\DOS\ANSI.SYS
```

To assign a control string to the Enter key so that you may activate insert mode by pressing Enter, add these lines to the end of your AUTOEXEC.BAT file:

```
@ECHO ON
@PROMPT $E[13;13;0;82p

@PROMPT $P$G
```

Be sure to leave a blank line between the two PROMPT commands. (The second one tells DOS how you want the DOS prompt to look.)

One final detail: After you reboot to put the changes in AUTOEXEC.BAT and CONFIG.SYS into effect, you'll be in type-over mode when you type in the DOSKEY command. When you press Enter after typing that line, you'll be in insert mode.

—Richard Penn

OPTIMIZING YOUR PATH STATEMENT

PATHs That Perform

Even if you've been down this road before, you can make your DOS PATH command more powerful with these tips and tricks.

by Ken Johnson

The function of the PATH command is fairly simple: It tells DOS which subdirectories to search when it can't find the specified command or program in the current directory. DOS "walks" the PATH before returning the "Bad command or file name" error message. Some programs also use the PATH statement to find their related files.

The PATH command is specified (usually in AUTOEXEC.BAT) by listing the directories to search, separated by semicolons:

```
PATH dirname1;dirname2;dirname3; ....
```

A typical PATH statement might look like this:

```
PATH C:\DOS;C:\;C:\UTIL;
  C:\WINDOWS;D:\BATCH;D:\WP60
```

The PATH statement above tells DOS check following places (in the order listed) for the program specified, if it isn't in the current directory:

- *C:\DOS:* the \DOS subdirectory on the C: drive
- *C:\:* the root directory of the C: drive
- *C:\UTIL:* the \UTIL subdirectory on the C: drive
- *C:\WINDOWS:* the \WINDOWS subdirectory on the C: drive
- *D:\BATCH:* the \BATCH subdirectory on the D: drive
- *D:\WP60:* the \WP60 subdirectory on the D: drive

Even if you're familiar with these PATH basics, you might not know some of the ways in which you can make it more efficient. Here are some lesser-known "pathways."

Let's Make It Short

Conventional wisdom says that you should keep your PATH statement as short as possible. There are two parts to this maxim. The first has to do with limitations on the physical length of the PATH statement itself, the second on the performance hit of a long path.

Traditionally, the PATH statement couldn't be longer than 127 characters, because the DOS command line has that limitation. Actually, the PATH statement was

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A PATH EDITOR

The PATH statement is an environment variable, and DOS doesn't provide a way to directly edit items stored in the environment.

The following short listing, EDPATH.BAT, however, outputs the PATH statement to a batch file, for easy editing and resetting:

```
@ECHO OFF
:: EDPATH.BAT edits the PATH
PATH > MAKEPATH.BAT
EDIT MAKEPATH.BAT
CALL MAKEPATH.BAT
CLS
ECHO The new path is:
ECHO %PATH%
DEL MAKEPATH.BAT
```

In this batch file, the current PATH is output to a file called MAKEPATH.BAT. MAKEPATH.BAT is then brought into a text editor (here, DOS's EDIT.COM, but substitute your favorite editor), where you can make the necessary changes.

After editing, MAKEPATH.BAT is CALLed, which resets the PATH in the environment to the new PATH you've specified. The batch file ECHOs the new PATH to the screen, so that you can confirm that the new PATH was indeed set. Finally, the MAKEPATH.BAT file is deleted because it's no longer necessary.

—K.J.

limited to 122 characters: 127 minus four characters for the word PATH itself and one space to separate PATH from the directory list. If you have only one hard drive, one way of shortening the PATH statement is to remove the C: drive identifier. For example:

```
PATH C:\QEMM;C:\DOS;C:\;
  C:\WINDOWS;C:\UTIL;C:\NU;C:\ZIP;
  C:\WP51
```

can be shortened to:

```
PATH \QEMM;\DOS;\;\WINDOWS;
  \UTIL;\NU;\ZIP;\WP51
```

Unfortunately, this method works only while your current drive is the C: drive. If you switch to the A: drive, DOS will look for the PATH directories on the A: drive; it won't find the programs you want.

For example, if the PATH statement includes \DOS instead of C:\DOS, and you type in the QBasic command at the C: prompt, DOS finds and runs QBASIC.EXE. But if you switch to the A: drive and type `QBASIC` from the A: prompt, you'll get the "Bad command or file name," because DOS is searching for A:\DOS\QBASIC.EXE.

Microsoft has reported one important warning about using this type of shortened PATH statement. In MS-DOS 6.0 only (not in MS-DOS 6.2), if the PATH is set to PATH=\DOS when you run MemMaker, MemMaker damages several files. These files are truncated to 8192, 4096, or zero bytes: CHKSTATE.SYS, EMM386.EXE, HIMEM.SYS, MEMMAKER.HLP, MEMMAKER.EXE, SIZER.EXE.

You'll also receive a "Sector not found" or "Bad or missing error in CONFIG.SYS" message. If that happens, reset the PATH statement to PATH=C:\DOS and expand these six files from the original MS-DOS 6.0 disks.

From a performance standpoint, a shorter PATH statement means that DOS doesn't have to search all over the disk to find programs. Programs will load faster, particularly if they're in directories at the beginning of the PATH statement. In addition, remember that every time you make a typing mistake, DOS will search the entire PATH statement before returning the "Bad command or file name" message. Longer PATH statements mean a longer wait each time you make a typo.

Take the Long Way

Though short PATH statements are the norm, sometimes you may need or want one longer than 122 characters. In MS-DOS 6.x, you now have that capability. CONFIG.SYS statements aren't limited to 127 characters, and in MS-DOS 6.x SET is a valid CONFIG.SYS command. So you can use SET PATH= in CONFIG.SYS to create a PATH statement as long as you need.

If you do set a long PATH statement in CONFIG.SYS, keep these points in mind:

- Once you set a long pathname in CONFIG.SYS, you can't change it from the command line. If you do (with the PATH command), the long statement will be truncated to the first 127 characters.

- Similarly, you can't use the %PATH% environmental variable in a batch file to modify the long PATH statement. If you do use %PATH%, the PATH statement will be truncated to the first 127 characters.

- If you use the SET command or the PATH command to view the current PATH statement, you'll see only the first 127 characters. The extra directories, however, are still there and will be used when DOS searches the PATH statement.

- If you want to see the complete PATH statement, run Microsoft Diagnostics (MSD) and select the OS option.

Some programs can't use a long PATH statement because they

ADDING TO YOUR ENVIRONMENT

If your PATH statement is long and you create and use environment variables in batch files, you may run out of environment space. Because the environment is a fixed area in RAM, you may fill the memory allocated to it. In such a case, you'll receive an "Out of environment space" error message. That means that you must increase the size of the environment.

The default environment size is 256 bytes with DOS 5 and later, but only 160 bytes in previous versions. As you can see, a long PATH statement and several environment variables can quickly fill the default environment size. Luckily, you can easily expand the size of the environment with the SHELL statement in your CONFIG.SYS file.

The /E:*nnnn* switch in the SHELL statement specifies the size of the environment in bytes. For example, /E:512 will create a 512-byte environment. You can set the size from 160 to 32,768 bytes. But because the environment is part of conventional memory, don't make it unnecessarily large, as it takes RAM away from your programs. For most users, a 384-byte environment (/E:384) is probably more than sufficient. Assuming you use COMMAND.COM as your command interpreter and that it's located in your \DOS subdirectory, the SHELL statement would be as follows:

```
SHELL=C:\DOS\COMMAND.COM
  C:\DOS /E:384 /P
```

—K.J.

assume it won't be longer than 127 characters. If you experience problems, you may need to cut your PATH statement back down to fewer than 127 characters. DOS's own Stacker Conversion program is one that will fail if the PATH statement is longer than 127 characters.

If you use a PATH statement longer than 256 characters and then try to clear the PATH with the SET PATH= command, any characters beyond the 256th character remain in the environment, unassociated with any environment variable.

With the PATH statement set in CONFIG.SYS, you may need to update it manually when you install a new program. Many installation programs modify AUTOEXEC.BAT by adding a directory to the PATH statement.

If the PATH statement is in CONFIG.SYS, the installation program won't find it and will create a new PATH statement in AUTOEXEC.BAT. When you boot, the PATH in AUTOEXEC.BAT replaces the PATH statement loading from CONFIG.SYS, leaving you with a PATH pointing to only one directory. So when you install a program, add its directory to the PATH statement in CONFIG.SYS and erase the PATH line in AUTOEXEC.BAT.

More PATH Boosters

There are other ways you can optimize your PATH statement for faster performance. The first is to put the most frequently accessed directories at the front of the PATH statement, so that DOS can find those programs quickly. For example, the following PATH statement:

```
PATH C:\;C:\UTIL;C:\UTIL\ZIP;
  D:\WP51;C:\NU;C:\DOS;C:\WINDOWS
```

is very inefficient for running DOS programs and Windows; if you use Windows often, DOS has to do a great deal of searching before it finds WIN.COM in C:\WINDOWS. A better PATH statement would be this one:

```
PATH C:\DOS;C:\WINDOWS;C:\;
  C:\UTIL;C:\UTIL\ZIP;D:\WP51;
  C:\NU
```

The extremely performance-minded among you should put your most frequently used directories first, and order the remaining directories based on size. Directories containing smaller numbers of files should appear toward the beginning of the PATH statement, with larger directories bringing up the end. Smaller directories are quicker to search than those with large numbers of files.

Always recheck your optimized PATH statement after installing new programs. Many installation programs add their program directories to the beginning of the PATH statement, which immediately destroys your careful optimization. Edit AUTOEXEC.BAT and move the new directory according to how often you'll be using the program. (Some older installation programs may add their own PATH statements to AUTOEXEC.BAT. Always look out for these extra PATH statements and delete them.)

TWO COMMANDS TO AVOID

If you've ever read about how to overcome the DOS PATH statement's 127-character limitation, you've probably seen references to the SUBST and APPEND commands. Although these commands can help shorten the physical length of the PATH statement, they can cause problems with other programs—particularly with Windows.

SUBST lets you substitute a one-letter drive identifier for a directory path. You can then use that drive letter in the PATH statement instead of the full directory specification. For example:

```
SUBST F: C:\APPS\WORDPROC\WP60
```

lets DOS treat files in C:\APPS\WORDPROC\WP60 as though they were in the root directory of drive F. Your PATH could then refer to F:\ instead of the full pathname.

Because SUBST disguises the true directory structure, it can cause problems for some programs and DOS commands. These are some of the commands you shouldn't use with a substituted drive identifier: ASSIGN, MSBACKUP, CHKDSK, DEFRAG, FORMAT, MIRROR, RESTORE, UNDELETE. Although SUBST works with Windows, Microsoft warns against adding, deleting, or changing any SUBST mappings while in Windows.

You can also use the APPEND command to extend the PATH statement, but it, too, can cause problems. APPEND makes specified directories an extension of the current directory, so that you can access files in those directories without specifying pathnames. APPEND with the /X switch lets DOS find executable files in the APPEND directories. For example:

```
APPEND /X
APPEND C:\PARADOX4;C:\DBASE3\PROGRAMS
```

tells DOS to search the C:\PARADOX4 and C:\DBASE3\PROGRAMS subdirectories for programs. DOS will always search these directories before the PATH directories, because it considers their files to be in the current directory.

APPEND can be dangerous. It may lose files; if an application opens a data file through APPEND, it may write the file back to the current directory, not the directory where the original file was located. You may return to the original directory and wonder why all your editing was lost. Also, never use APPEND with Windows, because it interferes with the ability of Windows and Windows programs to build valid paths for files they need to access.

—K.J.

Don't include floppy-disk drives in your PATH statement. When you make a typo, DOS must search the floppy, resulting in an even longer wait before the "Bad command or file name" message. If there's no disk in the drive (which is often the case), you'll then get the annoying "Abort, Retry, Fail" error.

Setting up a RAM disk and copying programs there can improve performance significantly, because it's faster to load programs from RAM than to read them from disk. If you do have a RAM disk, put it first in your PATH statement. Searching a RAM disk takes almost no time.

If you use batch files or DOSKEY macros to run programs, you can often remove directories from the PATH statement and have the batch file explicitly run the program with its full PATH statement, or change to the appropriate subdirectory, execute the program, then change back.

Put these batch files into a common directory (for example, C:\BAT) in the PATH statement, then remove the application directories from it. For example, if you work often with WordPerfect 5.1, create a C:\BAT\WP.BAT file such as this one:

```
@ECHO OFF
:: WP.BAT runs WordPerfect 5.1
:: with options
C:
CD \WP51
WP %1 /R /W=*.* /M=STARTUP
CD \
```

Now you can remove C:\WP51 from the PATH statement. When you enter WP at the command line, WP.BAT runs, which changes to the WordPerfect subdirectory and runs the program.

Undiscovered PATHs

Don't overlook the PATH command when optimizing your computer's performance, and don't neglect opportunities to modify the PATH in batch files or dynamically as you work. Of all the things you can do to make your computing time more productive, changing your PATH statement is one of the easiest. ■

CHANGE YOUR PATH ON THE FLY

The PATH statement is stored in the DOS environment, a block of conventional memory DOS uses as a "cubbyhole" to hold information. You can view the current PATH statement by entering PATH at the command line. Or enter the SET command, which will show you all environment variables, including the PATH statement.

Because you can manipulate environment variables in batch files (by referring to the variable name surrounded by percent signs), it's easy to change your PATH statement dynamically—while you're working. Modifying the PATH statement in AUTOEXEC.BAT and rebooting aren't necessary. For example, you may occasionally use programs that require their directories to be listed in the PATH statement. Rather than always putting those directories in the PATH statement, you can create two simple batch files—NEWPATH.BAT and OLDPATH.BAT—that will add a directory to the current PATH statement, then restore the original PATH:

```
@ECHO OFF
:: NEWPATH.BAT adds directory to path
IF %1!==! GOTO NODIR
SET OLD=%PATH%
PATH=%1;%OLD%
ECHO Your path is now:
ECHO %PATH%
GOTO END
:NODIR
ECHO Please enter the directory to add to the path
:END
```

```
@ECHO OFF
:: OLDPATH.BAT resets the original path after NEWPATH.BAT
IF %OLD%!==! GOTO END
PATH=%OLD%
SET OLD=
:END
```

The NEWPATH batch file first checks to make sure that a new directory was entered on the command line (which becomes %1). It then stores the original PATH statement in a new environment variable called OLD. The pathname is redefined, with the new directory appended to the front of the old pathname (%1;%OLD%). The batch file will then display the new PATH statement with the ECHO command.

When you're ready to restore the original PATH statement, simply run the OLDPATH batch file. It uses the OLD environment variable as the new PATH statement, then deletes that variable from the environment. Notice that the batch file first checks to see whether there's an OLD environment variable, and then simply branches to the end if it doesn't exist. Without an OLD environment variable, the PATH=%OLD% statement would resolve as PATH=, which would display the current PATH.

—K.J.

DOS TIP

CONTROLLING NUM LOCK

If you have MS-DOS 6.x, you can control the start-up status of the Num Lock key by adding a NUMLOCK command to your CONFIG.SYS file. To turn off this key, use NUMLOCK=OFF; to turn it on, use NUMLOCK=ON. Unfortunately, you can't execute the NUMLOCK command in batch files or from the DOS prompt.

—Ken Johnson

PC TOOLBOX

Exit Stage Left

A program's exit code can convey a wealth of information—and can even help you create more effective menus—but only if you know where and how to look for it.

by Robert L. Hummel

Exit codes fall squarely into the "better than nothing" category. The internal DOS function that returns an exit code limits programs to a single numeric code ranging from 0 (zero) to 255. Having only 256 possible return values isn't great. Even worse, your batch programs can evaluate this exit code only in the crudest fashion—by using a series of IF ERRORLEVEL commands.

But the worst problem with exit codes is their longevity—or lack thereof. You can't save an exit code, and its value is available only until you run another application. In most cases, your programs test an exit code and perform some immediate action, so the longevity of the exit code isn't an issue. But in other cases, preserving an exit code can really improve a program's operation.

For example, I wanted to write a batch program that would let me select a number of different programs from a menu, then run them. Because executing any one of these programs could take a long time, I wanted to make all my choices up front. To select the programs, I assigned each one a menu number, then used the DOS CHOICE command to get input from the keyboard. But each time I ran CHOICE, I'd lose the previous response. DOS gave me no way to save the exit codes.

To decode and preserve exit codes, I rely on a clever batch routine that reads the current exit code and stores it in an environment variable.

And to let batch programs return exit codes (and test my batch programs that depend on exit codes without having to actually create an error), I whipped up a utility program that sets the system exit code to any legal value.

Saving the Exit Code

At first glance, storing an exit code in the environment doesn't seem like that much of a problem. For example, assume that you have an application program that returns an exit code of 0 for success and 1 for failure.

Your first attempt to save the exit code might be the following pair of statements:

```
IF ERRORLEVEL 1 SET XCODE=1
IF ERRORLEVEL 0 SET XCODE=0
```

Although it looks straightforward, this approach won't work. The ERRORLEVEL test evaluates as true (and executes the target command) if the exit code is equal to or greater than the specified number. So if the exit code is 1, the first test evaluates as IF 1 >= 1, which is true. The second test evaluates as IF 1 >= 0, which is also true. XCODE is set to 0 regardless of the result.

Fortunately, you can fix this problem easily by reversing the order of the statements:

```
IF ERRORLEVEL 0 SET XCODE=0
IF ERRORLEVEL 1 SET XCODE=1
```

Now the assignments will work as planned. But there's still a problem. To be able to save all possible exit codes from 0 through 255, you'd have to write 256 IF ERRORLEVEL statements! Fortunately, there's a better way.

The SAVEEXIT Solution

Using only ordinary batch commands, SAVEEXIT.BAT, shown in the first listing (opposite), queries the system for the current exit-code value, converts it to a three-digit

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decimal string, and stores the string in the environment as the value of the variable XX. SAVEEXIT is designed to be CALLed from your other batch programs as a subroutine, or you can execute it directly at the command line.

SAVEEXIT combines the FOR and IF ERRORLEVEL commands to test the current exit code and construct the string equivalent as an environment string. The first FOR command constructs the values 000, 100, and 200 by concatenating the single digit of the FOR argument with the string 00. The IF ERRORLEVEL test then compares each of these values with the exit code. The last valid comparison sets the XX variable to 0, 1, or 2, representing the "hundreds" decimal digit of the exit code.

The second digit is also decoded using a FOR statement. But depending on the value of the hundreds digit, SAVEEXIT must perform some additional testing. Why? Because of the way the IF ERRORLEVEL command operates, you must take special precautions for exit codes from 200 through 255, to ensure that a valid value is decoded.

The DOS function a program uses to return an exit code accepts only a byte value. COMMAND.COM knows that and will automatically truncate any value you provide in the ERRORLEVEL statement to a byte.

For example, consider the command IF ERRORLEVEL 260. In this case, the value 260 (binary 100000100) is truncated to an 8-bit byte. Thus the test becomes IF ERRORLEVEL 4 (binary 00000100).

Valid arguments to the ERRORLEVEL statement, then, must fall in the range of 0 through 255. To avoid producing invalid values, SAVEEXIT must limit the tens and ones digits when appropriate.

The YY value is set to hold the digits 6 through 9. But if the first decoded digit of the exit code (as saved in the XX variable) is 2, the YY variable is cleared. When the second FOR command is executed, the YY variable is expanded. Thus for exit codes 200 or greater, the second digit of the exit code is compared only against the numbers 0 through 5.

For exit codes below 200, testing is performed against the full range of numbers 0 through 9. A similar strategy limits the ones digit for exit-code values 250 and greater.

Know Your Code

Now that you can save an exit code, you may be wondering what to do with it. The simplest thing is to use the ECHO command to display it on your screen.

For example, the batch program SHOWEXIT.BAT, shown here, gets the current exit code (using SAVEEXIT) and displays it:

```
@ECHO OFF
CALL SAVEEXIT
ECHO Exit code = %XX%
```

Using this technique, you can determine whether a program or a DOS command returns an exit code, and what that exit code means. Once they're identified, you can then use those exit codes to

The SAVEEXIT.BAT program queries the system for the current exit code and saves it in the environment as a string.

```
@ECHO OFF
REM SAVEEXIT.BAT
REM Reads the current exit code,
REM converts it to a decimal string,
REM and puts it into the environment
REM in the XX variable.

REM Get the hundreds digit
FOR %%a IN (0 1 2) DO IF ERRORLEVEL %%a00 SET XX=%%a

REM If less than 200, check tens for
REM all digits 0-9. If 200 or greater
REM check only for 0-5.

SET YY=6 7 8 9
IF /%XX%==/2 SET YY=

REM Get the tens digit
FOR %%a IN (0 1 2 3 4 5 %YY%) DO IF ERRORLEVEL %XX%%%a0 SET XX=%XX%%%a

REM If less than 250, check ones for
REM all digits 0-9. If 250 or greater
REM check only for 0-5.

SET YY=6 7 8 9
IF /%XX%==/25 SET YY=

REM Get the ones digit
FOR %%a IN (0 1 2 3 4 5 %YY%) DO IF ERRORLEVEL %XX%%%a SET XX=%XX%%%a

REM Clear the temporary variable
SET YY=
```

End

make your batch programs smarter. DOS commands that set meaningful exit codes include BACKUP, RESTORE, DISKCOMP, DISKCOPY, FORMAT, REPLACE, XCOPY, GRAFTABL, KEYB, and SETVER.

The SETERR Utility

Many batch programs use the exit code returned by an application to control their operation. But there's no simple DOS command to set the exit code. This makes testing these programs (including SAVEEXIT) difficult. To solve this problem, I wrote the utility SETEXIT.

Before you can use SETEXIT, you'll have to create it. To convert the Debug script SETEXIT.SCR (shown in the box below) to its executable equivalent, follow the simple instructions in the "Debug Scripts" section of "How to Use This Magazine" (page 63 in this issue).

You can use SETEXIT at the DOS command line or in a batch program. Follow the command name with at least one space and a number from 0 through 255. The SETEXIT program will read the string from the command line, convert it to a number, and report it as an exit code.

To verify that SETEXIT and SAVEEXIT are working, create the following batch program and call it TESTEXIT.BAT:

```
SETEXIT %1
SAVEEXIT
ECHO %XX%
```

Now execute the command TESTEXIT *nnn*, where *nnn* is any value from 0 through 255. If SETEXIT and SAVEEXIT are working properly, you should see the value you enter echoed back to you.

Coming Out of the Dark

Batch programs and utilities have traditionally used exit codes for clandestine communication. Using SAVEEXIT and SETEXIT, however, you can bring exit codes into the light of day, equipping your batch programs with more power and control over your everyday programming chores. ■

SETEXIT.SCR creates the program SETEXIT.COM, which reads a value from the command line and returns it as an exit code.

```
N SETEXIT.COM
A 100
MOV   SI,81
LODSB
CMP   AL,20
JZ    103
CMP   AL,D
JZ    122
SUB   AH,AH
MOV   CX,3
CMP   AL,D
JZ    122
SUB   AL,30
CMP   AL,9
JA    122
AAD
MOV   AH,AL
LODSB
LOOP  111
MOV   AL,AH
MOV   AH,4C
INT   21

RCX
28
W
Q
```

End

DOS TIP

WHAT CHOICE DO YOU HAVE?

The inclusion of CHOICE in the batch language's repertoire of commands is a boon to programmers who want to solicit input from a user and take action based on the user's response. But to ensure that a batch file using CHOICE is properly error-checked, you have to take a few extra precautions.

Checking for menu choices is straightforward. CHOICE returns an ERRORLEVEL value based on the position of an option in CHOICE's menu. Suppose, for instance, that you use the following ECHO statements to set up a menu:

```
ECHO A. Start editor
ECHO B. Start spreadsheet
ECHO C. Start comm program
```

When the user selects option A, CHOICE returns an ERRORLEVEL value of 1. For option B, it returns a value of 2; for option C, a value of 3. Consequently, you need to check for these values, and tell DOS what actions to take:

```
IF ERRORLEVEL 3 GOTO PROCOMM
IF ERRORLEVEL 2 GOTO 123
IF ERRORLEVEL 1 GOTO WP
```

You should also trap for two other values. The first is 255, the value CHOICE returns if an error occurs with CHOICE itself. In addition, check for an ERRORLEVEL of zero, the value returned if the user presses Ctrl+Break or Ctrl+C to break out of the CHOICE command, then types N when DOS asks whether to terminate the batch job. If you set up a program section called :ERROR to handle CHOICE errors, and a section called :END to handle Ctrl+C and Ctrl+Break, the entire sequence would look like this:

```
IF ERROR LEVEL 255 GOTO ERROR
IF ERRORLEVEL 3 GOTO PROCOMM
IF ERRORLEVEL 2 GOTO 123
IF ERRORLEVEL 1 GOTO WP
IF ERRORLEVEL 0 GOTO END
```

—Ken Johnson

BATCH-FILE MEDIC

Searching the Depths Of Your Drive: Part 1

A suite of elegant programming techniques makes FileFind an expert at locating files based on name or keyword.

by Hardin Brothers

I'm constantly amazed by what you can do with the DOS batch language. It was, after all, intended to run only simple command scripts—nothing more. And yet, with some thought and a lot of ingenuity, you can make the batch language do almost anything a "real" computer language such as QBasic, Pascal, and C can do.

For example, in this issue and the next, I'll show you how to do something I've previously claimed is impossible: get text input from the user in a straightforward way. I'll also show you how to save the current drive and directory and return to them at the end of a batch file. And, along the way, I'll describe dozens of other batch tricks.

A Full Application

Most installments of this column describe one or two batch-file techniques and present a couple of short programs that demonstrate how those techniques work. The problem with that approach is that you have to know how to develop a full batch program to really use the techniques. If you've never written a long, complete batch application, no individual techniques will help you learn how to do so.

In this issue, I'll present the first part of a complete utility program that's almost as powerful as some of its commercial and shareware counterparts. I'll also present solutions to some of the thorniest problems batch-file programmers face and show how they work in the context of a full application.

The final program, which I'll complete next month, is called FILEFIND.BAT (FileFind). Its job is to search for files, either in the current directory or anywhere on your hard disk, by filename or content. For example, you can use FileFind to locate all TXT files containing your name or all BAT files that use the CD command.

You can decide whether FileFind's search is case sensitive; whether it will search the current directory, the current directory and below, or the entire hard disk; and whether it should display the names of files matching your search criteria, every line of every matching file, or the entire text of each matching file.

You can enter some of FileFind's parameters on the command line or while the program is running. For example, if you don't specify the text for which you want to search, FileFind will prompt you for it. The batch file can also prompt for the names (including wildcards) of the files through which you want to search.

Added to that, the program offers at least a modicum of error checking, cleans up after itself when it's done, and always ends up in the directory in which it started.

Those were the requirements I set for myself before I started writing FileFind. I'll let you judge how successful I was in meeting them.

In the Beginning

FileFind begins with the obligatory @ECHO OFF statement (see the main listing, page 42) and then jumps to the START label in line 28. In

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between, I've put the HELP routine (lines 4 through 26), which displays the program's syntax and options if the user types `FILEFIND /H` or `FILEFIND /?` or tries to use a command-line option the program doesn't support.

The only unusual feature of the HELP section is that it doesn't contain the program's name. You can call the program FILEFIND.BAT, FF.BAT, FFIND.BAT, or anything else you want. Whatever name you give it will show up, properly capitalized, on the HELP screen.

And that leads to the first trick in the program. When a batch file begins, the name you used to start it is contained in the %0 command-line parameter. Normally, the name is stored exactly as you typed it. DOS doesn't care whether you typed the program's name in uppercase, lowercase, or mixed-case characters. It will still start the program for you, and it will store the program's name, as you typed it, in the %0 command-line parameter.

So the first challenge is to change a string into uppercase letters. And the solution to this problem is widely known. The PATH command always turns its argument into uppercase. For example, if you type this line:

```
PATH lower
```

at the C:\> prompt, then type the word `SET`, you'll see this entry in the environment:

```
PATH=LOWER
```

To use this feature, the batch file has to do an environment shuffle. It starts (line 29) by saving the current path in the environment variable FF_PATH. (Many of the variables this program uses start with FF_ to reduce conflicts with other programs.) Then it uses this command:

```
PATH %0
```

to save the program's name in the PATH variable and convert it to uppercase. It saves the result—its own name in uppercase—in FF_SELF and then restores PATH's original value.

Next, in line 34, the program stores the name of a directory that must be in your path in the FF_PATH variable. It will use this directory to write and execute some temporary batch and text files. There's only one more housecleaning step to go before the program can start in earnest.

Coming Home

Lines 36 through 45 solve the second problem this program presents. Later, the program will move from one directory to another to find files containing the search text. When the program is done, it needs to return to the current drive and directory. If it didn't, you couldn't tell where the program would dump you when it was done—but it would rarely be where you expected.

In today's world of large hard drives with multiple disk volumes, it's not unusual to work with a computer that uses C:, D:, and E: for hard drives, along with F: for a RAM disk, G: and H: for SUBST drives, and N: for a network. Therefore, it's not enough merely to capture the current directory and return to it. A program must also return to the current drive.

You probably know that if you're working on the C: drive, you can change to the default directory on the D: drive with this command:

```
D:
```

You may not know that the command D:\ does exactly the same thing. This bit of trivia is part of the key to lines 36 through 45. They begin by writing a Debug script file. The first line of the file—E100 43 44 20—writes 3 bytes in memory: the letters CD and a space. The next line names an output file, FF_RET.BAT, which will be stored in the directory named in the FF_PATH variable. Line 39 then writes four more lines to the script file. RCX and the numeral 3 that follows tell Debug to save 3 bytes. W and Q write the new file and then quit Debug.

Once the script file is written, line 40 runs the whole thing through Debug to create a 3-byte file. You could do the same task from the command line by typing this:

```
COPY CON FF_RET.BAT
CD<space><Ctrl+Z>
```

and pressing Return. But using Debug means that the program doesn't have to depend on an existing file. It creates the file as it goes.

Line 42 adds the current directory to FF_RET.BAT. Then the program switches to the root of the current drive and saves the root directory as the next line of FF_RET.BAT. After this line is executed, FF_RET.BAT looks something like this, assuming you've started in the D:\TEST\BATCH directory:

```
CD D:\TEST\BATCH
D:\
```

Those are the commands you need to get back to the current drive and directory from anywhere in your system. The last step in this sequence is to call FF_RET.BAT to move back to the directory from which you ran the batch file.

Saving Command-Line Parameters

A large part of the program, lines 47 through 133, is dedicated to collecting command-line parameters: the optional switches plus the name of the file to search and the text for which to search. The meaning of each parameter is explained on the help screen (lines 4 through 26).

Before you look at the program itself, notice a couple of things. All switches start with the / character. It makes no sense to use /C, /L, and /T together. In fact, the last of these three you enter will be the one the program uses. The filename is the only parameter you enter without a leading character. The search text, surrounded by quotation marks, must be the last parameter on the line.

Checking for parameters begins in line 48. This line is repeated for each parameter on the command line. I've used the forward-slash trick (covered in detail in "Batch-File Breakthrough," parts 1 and 2, January and March 1995, page 36 in both issues) to determine whether the first character of the current parameter is a slash, a quotation mark, or something else (including nothing if there are no more parameters).

The trick works because, within the parentheses of a FOR-IN-DO command, the first forward slash is interpreted as "Divide the following word into two parts: a single character and then everything else." The test in line 48 will succeed if the first character of the command-line parameter is another forward slash. The test in the next line succeeds if the first character is a quotation mark. If you want to see either line in action, substitute ECHO %%C for the GOTO command at the end of the line.

If the first character is a forward slash, the program branches to the PARAM label in line 60. There it removes the slash and stores the remainder of the parameter in the temporary variable P (line 62). Then it uses the value in P to determine whether the user wants help (lines 64 and 65) or is setting a program option (line 66).

If you set a program option, it's stored in an environment variable; then the SHIFT command moves the next parameter into the %1 variable. When that's done, the program returns to line 47 to work on the next parameter.

If you enter a filename (a parameter without a leading slash or quotation mark), the program stores it in the environment in line 89, performs a SHIFT, and then looks for the next parameter. If you enter search text, lines 94 through 100 read it one word at a time and store the entire string in the environment. This is one of the program's main weaknesses. The batch language accepts spaces, tabs, semicolons, and other characters as parameter separators. They're lost (the batch program can't see them); the program puts a single space between words.

Interactive Input

Without a filename and search text, the program can't do anything useful. The CHECK_PARAMS section, starting in line 102, makes sure you've entered both. If the filename or search text is missing, the program asks you to enter the necessary information before it continues.

The GET_NAME and GET_TEXT sections are similar and are based on the same batch-file trick. I'll start with GET_NAME, which is a little easier to understand. First, the program displays a prompt to ask for user input (line 110). Then it uses a strange-looking set of commands to get the user's input.

Line 111 starts with FC, a DOS utility that compares two files and displays their differences. One of the files it compares is CON: the console, or keyboard. The other file is the NUL device, equivalent to an empty file. The /LB1 option sets FC's internal line buffer to one line; it will accept only a single line from the CON device. The /N option tells FC to label mismatched lines.

Of course, whatever you type will be a mismatched line because it won't match the lack of input from NUL. FC displays your line or sends it on to the next command. Before you read further, type `FC CON NUL /LB1 /N` (the first part of line 111) at the command line and see what happens after you type a line of text. Note that the line you type is displayed with a line number of 1. Note also that none of the other lines is numbered.

The second part of line 111 sends FC's output to the DATE command. (TIME works just as well.) DATE echoes each line it receives and adds this:

```
Enter new date (mm-dd-yy):
```

in front of the line of text. (The word *Enter* will be important later.) If you want to see DATE in action, type line 111 at the command line and end before the second pipe symbol (|).

Finally, line 111 passes DATE's output to FIND and tells FIND to send all lines containing 1: to a file called FF_TEMP.BAT. Of course, FIND sends only one line to that file: the one containing your original line of text.

So now we have a batch file, FF_TEMP.BAT, containing one line:

```
Enter new date (mm-dd-yy): 1: Your Text.
```

If you run that batch file, COMMAND.COM will look for a program named ENTER and pass it the rest of the text as command-line parameters. It's our job to make sure that the ENTER program exists.

Line 112 creates a program named ENTER.BAT, containing only one line:

```
SET FF_NAME=%%5
```

One of the percent signs will disappear during the ECHO operation that creates ENTER.BAT.

In other words, ENTER.BAT will store the fifth command-line parameter in the environment variable FF_NAME.

And what's the fifth parameter? %0 will be *Enter*, %1 will be *new*, %2 will be *date*, %3 will be *(mm-dd-yy)*, and %4 will be *1:*. The fifth parameter will be the first word of text you entered when FC was waiting for input. In this case, it should be a filename, which may contain wildcards.

As noted above, GET_NAME is the most complicated part of this program. GET_TEXT is almost the same, except that its version of ENTER.BAT is a little more complex because it

Part 1 of FILEFIND.BAT (FILEFIND.ONE on the DOS World BBS). The complete program (stay tuned for part 2 in the January 1996 issue) will locate files anywhere on your hard disk, searching by filename or by content. Line numbers followed by the first colon in each line are for reference only; don't type them in.

```
1 : @ECHO OFF
2 : GOTO START
3 :
4 : :HELP
5 : CLS
6 : ECHO %FF_SELF% searches for files based on names
7 : ECHO and text in the files. To use:
8 : ECHO.
9 : ECHO %FF_SELF% [/H][/?] [/S] [/I]
    [/C][/L][/T] [filename] ["text"]
10 : ECHO.
11 : ECHO    /H and /? display this screen
12 : ECHO.
13 : ECHO  /S searches directory and all subdirectories
14 : ECHO.
15 : ECHO    /I uses case-insensitive search
16 : ECHO.
17 : ECHO    /C  displays matching filenames and
     count of matches
18 : ECHO    /L  displays matching filenames and
     matching lines
19 : ECHO  /T  displays full text of matching files
20 : ECHO.
21 : ECHO  [filename] is name of file(s) to search
22 : ECHO.
23 : ECHO    ["text"] is text to search for. Text
     must be in
24 : ECHO  quotation marks and must be last parameter
25 : ECHO         on the command line
26 : GOTO END
27 :
28 : :START
29 : SET FF_PATH=%PATH%
30 : PATH %0
31 : SET FF_SELF=%PATH%
32 : SET PATH=%FF_PATH%
33 : :: Change the following to a directory in
     your path:
34 : SET FF_PATH=C:\BAT
35 :
36 : :: Create a way to get back to this drive and
     directory.
37 : ECHO E100 43 44 20 > FF_TEMP.SCR
38 : ECHO N%FF_PATH%\FF_RET.BAT >> FF_TEMP.SCR
39 : FOR %%C IN (RCX 3 W Q) DO ECHO %%C >> FF_TEMP.SCR
40 : DEBUG < FF_TEMP.SCR > NUL
41 : DEL FF_TEMP.SCR
42 : CD >> %FF_PATH%\FF_RET.BAT
43 : CD \
44 : CD >> %FF_PATH%\FF_RET.BAT
45 : CALL %FF_PATH%\FF_RET.BAT
46 :
47 : :DISPATCH
48 : FOR %%C IN (/%1) DO IF !%%C==!/ GOTO PARAM
49 : FOR %%C IN (/%1) DO IF !%%C==!" GOTO TEXT
50 : IF NOT !%1==! GOTO FNAME
51 : GOTO CHECK_PARAMS
52 :
53 : :BAD_PARAM
54 : ECHO.
55 : ECHO Parameter /%P% is not recognized
56 : ECHO.
57 : PAUSE
58 : GOTO HELP
59 :
60 : :PARAM
61 : :: Read one parameter in %1, then SHIFT
       and loop back
62 : FOR %%C IN (/%1) DO SET P=%%C
63 :
64 : FOR %%C IN (H h) DO IF !%%C==!%P% GOTO HELP
65 : IF !P%==!? GOTO HELP
66 : FOR %%C IN (c C i I l L s S t T) DO IF
     %%C==%P% GOTO PARAM_%%C
67 : GOTO BAD_PARAM
68 :
69 : :PARAM_C
70 : SET FF_OUT=C
71 : GOTO END_PARAM
72 : :PARAM_I
73 : SET FF_CASE=/I
74 : GOTO END_PARAM
75 : :PARAM_L
76 : SET FF_OUT=L
77 : GOTO END_PARAM
78 : :PARAM_T
79 : SET FF_OUT=T
80 : GOTO END_PARAM
81 : :PARAM_S
82 : SET FF_SUBS=/S
83 :
84 : :END_PARAM
85 : SHIFT
86 : GOTO DISPATCH
87 :
88 : :FNAME
89 : SET FF_NAME=%1
90 : SHIFT
91 : GOTO DISPATCH
92 :
93 : :TEXT
94 : :: Get text input (first character must be
      a quote mark)
95 : SET FF_TEXT=
96 : :TEXT2
97 : IF !%1==! GOTO DISPATCH
98 : SET FF_TEXT=%FF_TEXT% %1
99 : SHIFT
100 : GOTO TEXT2
101 :
102 : :CHECK_PARAMS
103 : IF !%FF_OUT%!==!!  SET FF_OUT=C
104 : IF !%FF_NAME%!==!! GOTO GET_NAME
105 : IF !%FF_TEXT%!==!! GOTO GET_TEXT
106 : GOTO START_SEARCH
107 :
108 : :GET_NAME
109 : ECHO.
110 : ECHO Enter name of file (may contain wildcards):
111 : FC CON NUL /LB1 /N | DATE | FIND "1: " >
      FF_TEMP.BAT
112 : ECHO @SET FF_NAME=%%5 > ENTER.BAT
113 : CALL FF_TEMP.BAT
114 : DEL FF_TEMP.BAT
115 : DEL ENTER.BAT
116 : GOTO CHECK_PARAMS
```

Listing continues opposite

Continued from opposite page

```
117 :
118 : :GET_TEXT
119 : ECHO.
120 : ECHO Enter search text. Text MUST start
      and end with
121 : ECHO a quotation mark:
122 : FC CON NUL /LB1 /N | DATE | FIND "1: " >
      FF_TEMP.BAT
123 : ECHO @ECHO OFF > ENTER.BAT
124 : ECHO :LOOP >> ENTER.BAT
125 : ECHO IF !%%5==! GOTO END >> ENTER.BAT
126 : ECHO SET FF_TEXT=%%FF_TEXT%% %%5>> ENTER.BAT
127 : ECHO SHIFT >> ENTER.BAT
128 : ECHO GOTO LOOP >> ENTER.BAT
129 : ECHO :END >> ENTER.BAT
130 : CALL FF_TEMP.BAT
131 : DEL FF_TEMP.BAT
132 : DEL ENTER.BAT
133 : GOTO CHECK_PARAMS
134 :
135 : :START_SEARCH
136 : :: Create list of possible directories:
137 : IF !%FF_SUBS%!==!! GOTO SS_1
138 : ECHO.
139 : ECHO Creating directory list ... Please wait ...
140 : :SS_1
141 : DIR %FF_NAME% %FF_SUBS% | FIND "Directory"
      > %FF_PATH%\FF_LIST.TXT
142 : ECHO EXIT >> %FF_PATH%\FF_LIST.TXT
143 : ECHO @ECHO OFF > %FF_PATH%\DIRECTOR.BAT
144 : ECHO SET FF_PLACE=%%2>> %FF_PATH%\DIRECTOR.BAT
145 : ECHO CALL _FFIND >> %FF_PATH%\DIRECTOR.BAT
146 :
147 : COMMAND /E:5000 < %FF_PATH%\FF_LIST.TXT > NUL
148 : CALL %FF_PATH%\_FFSHOW.BAT
149 :
150 : :: Now clean up
151 : CALL %FF_PATH%\FF_RET.BAT
152 : DEL %FF_PATH%\FF_RET.BAT > NUL
153 : DEL %FF_PATH%\DIRECTOR.BAT > NUL
154 : DEL %FF_PATH%\FF_LIST?.TXT > NUL
155 : SET FF_OUT=
156 : SET FF_TEXT=
157 : SET FF_SUBS=
158 : SET FF_CASE=
159 : SET FF_NAME=
160 : SET FF_SELF=
161 : SET FF_PATH=
162 : SET FF_TEMP=
163 : SET P=
164 : :END
```

End

has to read every word you enter and save the entire string in the environment (just as lines 94 to 100 did if you entered search text on the command line).

On Your Mark

We're just about ready to start searching for files, which, after all, is the whole point of this program. Line 141 uses the DIR command, along with FIND, to create a list of directories to search. (The list will contain only one entry if you haven't specified the /S option.) Each entry in the list will take this form:

```
Directory of x:\xxxxx\xxxx
```

Then the program adds the word EXIT to the end of that list (line 142). Now, if we only had a Directory command, we could run each line as a command.

In line 143, we create DIRECTOR.BAT, our substitute for the Directory command. As each line is executed, DIRECTOR.BAT will run.

This batch file's job is to change to the correct directory and then execute _FFIND.BAT, the batch file that does the real work of searching for files.

Finally, we're ready to start the search. To do so, line 147 starts a new copy of COMMAND.COM, gives it a large environment, and passes the list of directories to it as a group of commands.

When it's finished, COMMAND.COM will exit back to FileFind, which runs _FFSHOW.BAT to display the files and then cleans up a bit before it ends.

We've covered a lot in this issue: starting a powerful utility program as well as solving some problems that plague many batch-file programmers. Next time, I'll explain _FFIND.BAT, the program that does the real work for this utility. ■

DOS TIP

CUSTOMIZING DIR

The environment variable DIRCMD lets you tell DOS what kind of directory listing you want to see when you type DIR. Set this variable by adding a command such as the following to your AUTOEXEC.BAT file:

```
SET DIRCMD=/O-GEN /A
```

This particular command tells DOS to display all files (/A), place directories after files (-G), and put entries into alphabetical order by extension and then by filename (EN).

One way to override these settings is by issuing another SET DIRCMD command at the DOS prompt. (You may clear the DIRCMD setting by typing `SET DIRCMD=`.) The new setting remains in effect until you change DIRCMD or reboot your machine.

—Ken Johnson

SCREEN-CAPTURE PROGRAMS

Exploring the World Beyond "Print Screen"

No single screen-capture program does it all, but if you can narrow your focus, you'll find just the right product to add zip to your presentations.

by Jodie Gilmore

It's a widely known fact that charts and pictures can spice up your computer-generated reports and presentations, especially if they emphasize pertinent information in your documents. Although the logical way to bring these visual aids to life is to capture them from your screen, many screen-capture programs don't run under DOS. So what can you do—and how do you choose the right program?

The answer depends on what you want to do with the screen shot after you capture it: Do you need to edit it or incorporate it into a document? Perhaps you'd like to use screen captures to create a video slide show. Do you expect to capture screens from DOS only, or from both DOS and Windows?

No one screen-capture program meets all these needs well, but I've found that for most purposes, four products are worth investigating: **Screen Thief 1.58** (Public Software Library, 800-242-4775, **info @nildram.com**; $39), **Pizazz Plus 4.0** (Application Techniques Inc., 508-433-5201; $149), **Collage Complete** (Inner Media Inc., 800-962-2949; $149), and **HiJaak Graphics Suite 3.0** (Inset Systems Inc., 800-374-6738; $109.99 disk, $99.99 CD-ROM).

Capturing the Moment

Almost all screen-capture packages work the same way: You load them, bring up the screen you want to capture, then press one or more designated keys to trigger the capture process.

Because screen-capture packages are TSRs (terminate-and-stay-resident programs), they're prone to memory conflicts. So, after you decide on a screen-capture package that meets your needs, be sure to read the accompanying sidebar, "Saving Precious Memories" (opposite), to identify any RAM problems you may encounter.

Now let's take a look at what these four representative screen-capture products can and can't do.

Keep It Simple

Many applications refuse to accept a screen-capture program's keyboard interrupts, but **Screen Thief**, a shareware program, makes screen capturing simple. (See the first screen shot, opposite.)

Screen Thief "remaps" keyboard interrupts so that an application is "fooled" into accepting the capture program's keystrokes. Along with that, Screen Thief offers support for a modest number of text- and graphics-output formats, as well as options that let you tweak the capture process, such as adjusting compression level and screen-capture width.

Although Screen Thief is billed as a DOS product, a pleasant surprise is that it can also capture most Windows screens in standard mode, and run in a windowed DOS session from either standard or enhanced-mode Windows.

Screen Thief may be powerful in its own way, but it's limited in that it doesn't offer anything except the most basic screen-capture functions. It doesn't include image display, editing, and management features, for example.

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And although Screen Thief automatically recognizes many video cards, my Diamond Viper wasn't among them. It accepts only VGA graphics adapters, so although I got good screen captures using the generic VGA driver, I couldn't take advantage of my card's higher-resolution modes.

If you mostly need to capture screens from "vector temperamental" DOS applications, and don't need editing features, Screen Thief is an excellent choice despite its narrow focus.

Please Adjust Your Set

A picture may be worth a thousand words, but only if the picture says what you want it to say. Pizazz Plus for DOS, part of **Pizazz Plus 4.0**, provides screen-capture and file-conversion utilities (PZP and CVT, respectively) that let you adjust many aspects of your captured image.

Let's say you want to use a captured screen in a document, but you don't want to use the image in its original form. For example, perhaps you need only a portion of the screen. With Pizazz Plus, once you've captured a screen with PZP, you can use the Crop feature to eliminate unwanted sections. (See the second screen shot, page 46.)

You can also print the image in landscape mode (along the long

Screen Thief excels at capturing screens in applications that don't honor typical interrupts. This is the opening screen from the adventure game Dragonsphere.

SAVING PRECIOUS MEMORIES

If you intend to do much screen capturing in both DOS and Windows, your computer should have both extended and expanded memory. Collage Complete for Windows and HiJaak Graphics Suite, for example, both require at least 4MB of RAM. Expanded memory can be provided by several drivers, such as QEMM or EMM386.

Several of the screen-capture packages mentioned in this article can use expanded memory to reduce the use of precious conventional memory. The approximate conventional-memory requirements for each DOS screen-capture program, with and without the use of expanded memory, are listed in the table below.

Besides providing extended and expanded memory, you can also take advantage of various memory-optimization techniques each program offers.

Screen Thief automatically uses upper memory between 640K and 1MB. It also automatically uses available expanded memory provided by drivers v3.20 and later. In addition, Screen Thief supports the /BUFFERS option, which you can employ to force Screen Thief to use upper, expanded, high, or low memory, thereby avoiding memory conflicts with other applications.

Pizazz Plus for DOS takes up only about 8K, and doesn't include any memory-optimization options per se. It avoids overloading memory by using PZP, which captures and saves screens, and CVT, which converts them. Batch files, such as PZIVIEW, PZPWIN, and PZIPRINT, provide further services.

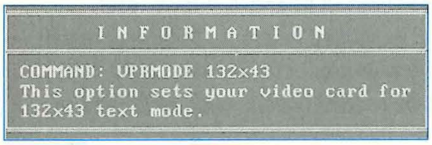
Collage Complete for DOS provides "reduced" versions of its programs, such as SNAP, SAVE, VIEW, and SHOWLITE. By loading only the program pieces you need, you conserve memory. With SNAP, SAVE, and VIEW, you can also use two mutually exclusive memory-optimization options: /E forces the program to load into expanded memory, while /T makes the program use the hard disk (instead of memory) for temporary storage of screen buffers, and reduces each program's memory requirements by nearly half. (For example, SNAP requires only 76K instead of 107K.)

HiJaak Graphics Suite's DOSCAP doesn't like to share expanded memory with other TSR programs. (It registers its displeasure by locking up your terminal.) Use HiJaak's MaxEMS option to control how much expanded memory the suite (including DOSCAP) uses. If DOSCAP locks up your terminal, set MaxEMS to zero. (DOSCAP needs little conventional memory, so expanded memory isn't normally necessary.) If you decide to use expanded memory with the Windows portions of HiJaak, check the syntax of the FRAME= option in the EMM386.SYS driver specification. Don't use FRAME=NONE.

—J.G.

Program	Conventional/Standard	Conventional/Expanded
Screen Thief	9K	2K
PZP	8K	not applicable
SNAP	107K	16K
DOSCAP	6K	varies, depending on MaxEMS setting

edge of the paper) instead of portrait mode (along the short edge of the paper), by rotating the captured image 90 degrees. To get special effects, you can mirror the image: flip it top to bottom or side to side, so that it looks as though you're reading it in a mirror.



```
COMMAND: VPRMODE 132x43
This option sets your video card for
132x43 text mode.
```

Pizazz Plus' cropping feature lets you edit an image to include only what you want—in this case, a portion of the Diamond Viper video card's Help screens.

If you need to adjust your captured screen's color and shading, you can use PZP's Style feature to choose from half-tone (the best), presentation, standard, or draft (strictly for proofing purposes). Pizazz Plus's Shading feature lets you adjust how PZP translates screen colors into print colors. Other image-editing options include width and height adjustment, and control of how the image prints (margins, placement, and so on).

When you use PZP to capture a screen, the software saves it in a graphics-file format called PZI. But because few applications accept that type of file, you must run CVT (or its command-line equivalent, CONVERT) to change the format to one that's acceptable to your application. Currently, CVT supports 24 input formats (files it can read) and 22 output formats (files it can write).

Pizazz Plus for DOS also includes PZPWIN, which displays a PZI file followed by the PZP menu—a good way to edit an existing file. PZIPRINT, meanwhile, prints PZI files. And if you want to create a BAT file containing several PZIPRINT commands, you can print a large number of files overnight.

Pizazz Plus for DOS offers extensive printer support (more than 500 color and black-and-white models), and is compatible with standard graphics adapters (VGA, EGA, and CGA), as well as Hercules monochrome adapters and several video-capture boards (special graphics adapters to display video from a VCR).

On the downside, you must issue all commands from the Pizazz Plus directory, even if your PATH statement contains it; otherwise, your system will freeze. In addition, the manual contains some serious faults, the worst of which is docu-

COMING TO TERMS

BIT-MAPPED IMAGE. An image in which pixels are arranged in a grid format, like a sheet of graph paper. The colors and arrangement of the pixels form the picture. This type of graphic is also called a "raster" image. Examples of bit-mapped formats include BMP (Windows bitmap) and TIFF (tagged-image file format).

COMPRESSION ALGORITHM. A process that reduces the size of a graphics file. Sometimes, the more you compress, the less detail you have. Examples of compression algorithms include LZW for TIFF files and RLE for BMP files.

CROP. To delete unwanted portions of an image.

DIFFUSE. A technique to create a gray-scale image. Pixel patterns aren't set; they change gradually throughout the image.

DITHER. To create a gray-scale image by using fixed patterns of black and white pixels to represent each shade of gray. Every time the image needs a particular shade of gray, the software uses the same pattern.

GRAPHICS-FILE FORMATS. Standard methods of representing an image. Formats are divided into two basic types: bit-mapped and vector.

GRAY-SCALE. An image that looks like a black-and-white TV screen, using varying shades of gray, ranging from black to white.

METAFILE. An image containing instructions for recreating an image. One example is WMF (Windows metafile).

MIRROR. To flip an image, vertically or horizontally; the result is like looking at your captured image in a mirror.

PIXEL. A colored dot. In a bit-mapped image, each pixel has a place in the grid and an assigned color.

RESOLUTION. For a bit-mapped image, the number of pixels displayed or printed per inch. Common resolutions are 300 and 600 dpi (dots per inch).

ROTATE. To turn an image—clockwise or counterclockwise—a certain number of degrees (usually in increments of 90).

TERMINATE-AND-STAY-RESIDENT (TSR). A program that stays available after you load it into memory, right up until you unload it, without occupying the screen until called. Most screen-capture programs are TSRs, but programs like the DOS editor (EDIT.COM) aren't.

VECTOR IMAGE. An image consisting of mathematical formulas that define the image by describing lines and curves. Examples of vector formats include EPS (encapsulated PostScript) and DXF (AutoCad).

—J.G.

menting the PZPWIN utility as PZIMENU. Finally, Pizazz Plus for DOS doesn't include any image-management capabilities, which makes it difficult to keep track of numerous captured images.

If you use DOS and Windows, note that Pizazz Plus is two separate products: Pizazz Plus for DOS (described above) and Pizazz Plus for Windows. You must install both to capture screens from both DOS and Windows. The Windows version offers basically the same features as the DOS program, although I found it somewhat easier to use. For example, with Pizazz Plus for Windows, you can open and edit files in many formats, instead of just PZI. The Windows version also supports several more formats than the DOS edition.

On the other hand, Pizazz Plus for Windows can't capture DOS screens, even windowed DOS sessions. And, like the DOS version, the Windows edition offers no image-management capabilities.

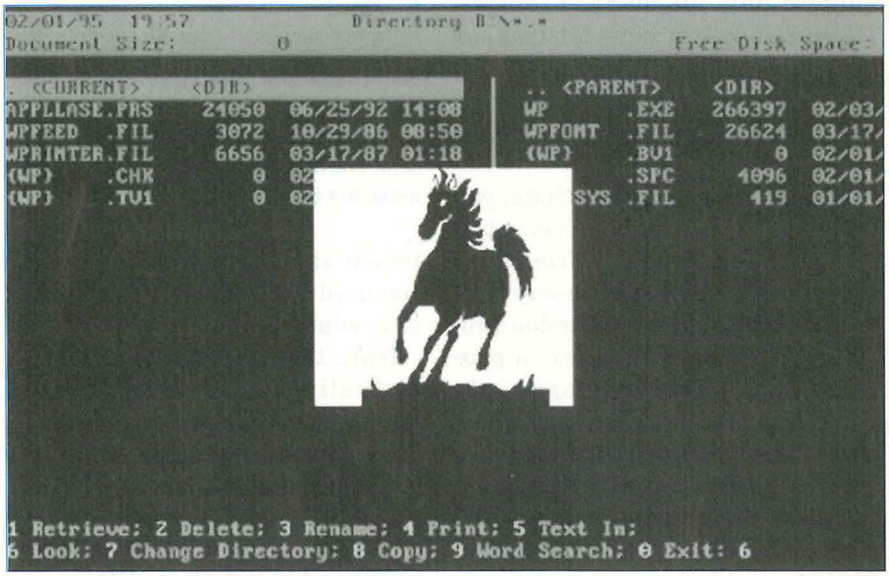
If you need basic image-editing and conversion capabilities under DOS and/or Windows, but don't capture enough images to need management features, Pizazz Plus is a reasonable choice.

The (Slide) Show Must Go On!

Plain transparencies are passé; the newest rage at meetings and conferences is computer-based slide shows. Although programs such as PowerPoint and Harvard Graphics for Windows are ideal, you can still produce nifty slide shows even if you have only DOS on your PC.

Collage Complete for DOS, part of **Collage Complete**, not only features screen capturing and image management, but also includes a powerful display tool that supports several image types; you can run it in batch mode, too. Collage's image-display program is called SHOW. By typing `SHOW` at the command line, you'll see a list of files and directories, which you can use to rename, delete, print, or display images.

But the DOS-based command-line options are what make SHOW such a useful slide-show development tool. (See the third screen shot, below.) You can create a file that provides SHOW with the names of images to display, and options that will affect how those images will appear on screen.



```
02/01/95  19:57                 Directory B:\*.*
Document Size:         0                                   Free Disk Space:

. <CURRENT>     <DIR>                    .. <PARENT>     <DIR>
APPLLASE.PRS    24050  06/25/92 14:08    WP      .EXE   266397  02/03/
WPFEED  .FIL     3072  10/29/86 08:50    WPFONT  .FIL    26624  03/17/
WPRINTER.FIL     6656  03/17/87 01:18    {WP}    .BV1        0  02/01/
{WP}    .CHK        0  02                        .SPC     4096  02/01/
{WP}    .TV1        0  02                    SYS .FIL      419  01/01/

1 Retrieve: 2 Delete: 3 Rename: 4 Print: 5 Text In:
6 Look: 7 Change Directory: 8 Copy: 9 Word Search: 0 Exit: 6
```

Collage Complete lets you display images one over another, to create custom slide shows on your PC. (Editor screen captured by Pizazz Plus; horse graphic captured by Screen Thief from Windows.)

For example, you can control how long the image displays, set keys that advance the slide show, and even layer images by preventing the screen from clearing between images.

Collage Complete's tools include SNAP, a full-fledged screen-capture program; SAVE, which captures screens but doesn't support printing; and VIEW, which supports image printing and previewing (only in monochrome). And not only does Collage Complete support VGA, EGA, and CGA, but it also embraces the HGC, PS/2, AT&T VDC 400, and MDA graphics adapters.

Collage Complete for DOS stops short of being a truly complete screen-capture product because it doesn't offer image-editing capabilities or direct file conversion. (To convert a file, you must display it with SHOW and then use SNAP to save it to another supported format.)

For cross-platform users, Collage Complete comes in both DOS and Windows versions, but, unlike Pizazz Plus, Collage's Windows version offers significant improvements over its DOS cousin. For example, you can create "catalogs" of related images, and it supports TWAIN (a standard protocol for obtaining graphics from scanners) and Kodak Photo CD files. Collage for Windows also captures windowed (but not full-screen) DOS sessions, and offers image conversion and a wide variety of image-editing tools.

For DOS-only users, Collage Complete is a good choice if you want to capture, manage, and display images—not edit them. But if you have access to both DOS and Windows, Collage Complete offers a "medium horsepower" solution to almost all image-capture, editing, conversion, and management tasks.

The Smell of Suite Success

If you want to capture many screens from both DOS and Windows, check out **HiJaak Graphics Suite**, a Windows program that includes a

DOS capture utility. (HiJaak for DOS is also available, but it doesn't offer nearly as much functionality as Graphics Suite.)

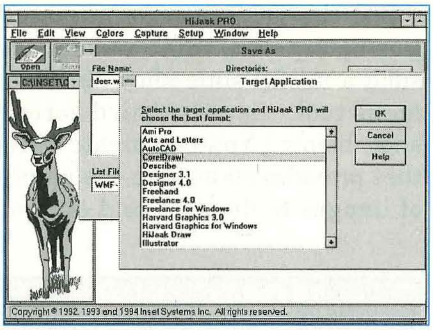
One of the biggest differences between HiJaak and the other screen-capture programs reviewed here is that although the others support only bit-mapped images, HiJaak supports both bit-mapped and vector. That's important if you're using, for example, a CAD/CAM drawing package, which is in vector format.

With HiJaak Graphics Suite, you get HiJaak Browser (a versatile image-management program), HiJaak PRO (the screen-capture, image-editing, and conversion program), HiJaak Smuggler (a program that imports images into other applications), HiJaak Draw (a drawing program), and HiJaak TouchUp (another image-editing program, for bit-mapped images), plus a DOS capture utility called DOSCAP.

You'll have to install Graphics Suite under Windows, but once you do, you can call up DOSCAP from DOS *before* you start Windows, or from a windowed or full-screen DOS shell within Windows. You can also click on the DOSCAP icon to launch a full-screen DOS session.

DOSCAP will prompt you for a filename, which is always saved in IGF format. Once you capture your screen (using either DOSCAP or HiJaak PRO), you can edit it for color, size, and more, or import it into another application. Versatility is one of HiJaak's strong suits: It supports 34 bit-mapped formats, 14 vector formats, and eight metafile formats. (See the fourth screen shot, above.)

HiJaak Smuggler can greatly simplify the task of importing images. Smuggler adds an icon to the title bar of applications that support pasting graphics from Windows' Clipboard (for example, PageMaker, Write, and Word). Clicking on the icon opens a dialog box where you can choose the image and any processing options you need (such as size, color changes, or resolution).



Select the target application and HiJaak PRO will choose the best format:

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During conversion, HiJaack's PRO module lets you pick the target application instead of having to know the file-format extension. Here, PRO is converting this original WMF image to a CorelDraw file.

Note that the image can be in virtually any format; HiJaack Smuggler takes care of converting it to a form compatible with your target application.

Like Collage Complete for Windows, Graphics Suite supports TWAIN and Kodak Photo CD images; you also get 300 clip-art images. DOSCAP supports many graphics adapters, including VGA, EGA, CGA, VGC, MDA, and Hercules.

Keep in mind that any computer application as complex as HiJaak Graphics Suite is going to have a few "gotchas."

For example, although Smuggler worked great with Windows Write, it didn't interact well with Microsoft Word for Windows 6.0 during my testing. (When I clicked on the Smuggler icon in the Word title bar, my system hung. When I pressed the hot key for Smuggler, though, everything worked fine.)

In addition, DOSCAP didn't like my generic mouse driver, and locked my keyboard whenever I issued the DOSCAP command. But when I replaced my mouse driver with an industry-standard Logitech version, DOSCAP was happy.

Despite its "gotchas," if you use Windows but also capture DOS screens, HiJaak Graphics Suite may be the best buy of all. And if you need to capture vector graphics, this product is a must-have.

The Big Picture

Screen capturing is one of the easiest ways to create graphics, with uses ranging from simple printouts to slick computer presentations. Likewise, screen-capture packages range from the command-line-driven Screen Thief to the fully loaded HiJaak Graphics Suite.

If you evaluate your needs carefully and then purchase a compatible program, you may soon be dazzling your boss with new, more visually appealing work. ■

DOS TIP

TAKE A MESSAGE FROM HIMEM AND EMM386

In MS-DOS 6.x, neither HIMEM.SYS nor EMM386.EXE displays initialization information when loading. If you want to see messages from HIMEM.SYS and EMM386.EXE, add the /V (for *verbose*) switch to the lines that access these device drivers:

```
DEVICE=C:\DOS\HIMEM.SYS /V
DEVICE=C:\DOS\EMM386.EXE /V
```

If either program encounters an error when loading, it switches into verbose mode, and you see both the error message and normal start-up information.

—Ken Johnson

DOS UPGRADES FOR VINTAGE PCs

New Wine in Old Bottles

Don't throw away that old 8088 or 286! You may not be able to run all the latest software, but you can still get extra life from Old Faithful.

by Ken Johnson

If you're still running an original PC (8088) or AT (286) computer, you may have the sinking feeling that today's software is leaving you by the wayside. For the most part, that's true. Many newer DOS and Windows programs require a 386 or better; a 486 is often recommended. Even MS-DOS itself isn't immune; since version 5, many added features require at least a 386 processor.

But all is not lost, so don't throw away that Old Faithful just yet. The good news is that you can still enjoy better computing productivity by upgrading to the current version of MS-DOS (6.2)—still one of the best-selling upgrades on the market despite all the anticipation surrounding Windows 95.

This computing paradox of doing more with less, however, often comes with a memory-requirement tradeoff. (See the sidebar "Coping with Memory Loss," page 50.) Unfortunately, 8088 and 286 computers can't use memory the way 386 or 486 PCs do. 8088 PCs can use only conventional memory, and expanded memory if you add an expanded-memory board and an EMS manager. 8088s don't have extended memory, upper memory, or the high-memory area available. TSRs and device drivers must be loaded into conventional memory, sharing space with the expanded-memory page frame (usually 64K).

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Quickly, you come to understand the meaning of the phrase "RAM cram." So, when upgrading DOS with an 8088, there will be programs and features you can't use, because your processor doesn't support the type of memory required. You'll have more options by upgrading a 286, but remember: For either machine, the benefits of upgrading your DOS version are mostly geared to better productivity.

Enhancements for Better Work

Let's walk through what you can get for your DOS-upgrade dollars. As an example, I'll use my original 8088, which I recently converted from a very early and limited version of DOS to DOS 6.2. The reasons were plentiful:

- **DOSKEY.** To me, DOSKEY (introduced in version 5) saves so much time and effort when working at the DOS command line that it was nearly my sole reason for upgrading. Unlike early DOS versions, later editions of DOS give you smart command-line editing and recall, plus the ability to create your own command-line macros, via DOSKEY—all for only a scant 4K of memory.
- **Significant new HELP.** When you upgrade to MS-DOS 6.2, you may be surprised at the slimness of the DOS manual. Much of DOS's documentation has been put on line. You can get quick information about a command and its format and switches by typing /? after the command name. For details, type HELP to access the on-line manual. For most commands, you'll find a Syntax page, an Examples page, and a Notes page.
- **Improved DIR display.** New DIR switches in version 6.2 surpass the

COPING WITH MEMORY LOSS

Newer versions of MS-DOS and its programs make use of several different types of memory. The management programs HIMEM.SYS and EMM386.EXE have been part of DOS since version 5. Then there's conventional memory—the precious 640K where programs execute. Upper memory lies between 640K and 1MB, while above 1MB is extended memory (XMS), which only 286 and later processors can access. A special part of extended memory is the high-memory area (HMA), the first 64K above 1MB. And finally there's expanded memory (EMS), which is pageable memory swapped in from a memory card or from extended memory.

In a 386 or later processor, DOS and its programs can use all these types of memory, toward the goal of freeing as much conventional memory as possible. Terminate-and-stay-resident programs (TSRs) and device drivers are loaded into upper memory, and part of DOS itself is loaded into the high-memory area. Programs like SmartDrive use extended or expanded memory; some, like VSAFE, use a combination of conventional and expanded or extended.

What if you have an 8088 and want to move up to MS-DOS 6.2? First, you can delete HIMEM.SYS, DOS's extended-memory manager. The same holds true for EMM386.EXE, which requires HIMEM.SYS and a 386 processor, as the name suggests. (EMM386.EXE provides access to upper memory for loading programs and drivers, and can also convert extended memory to expanded.) There's no way to use MemMaker, because it optimizes memory usage by way of upper memory and the high-memory area. So delete it.

You can, however, take advantage of some of DOS 6.2's memory-management techniques by using a 286 computer with extended memory. The 286, for example, can use extended memory and the high-memory area with an extended-memory manager such as HIMEM.SYS. A 286 with extended memory can also run SmartDrive, giving you the performance benefits of a disk cache.

And, if your 286 has at least 64K of extended memory, you can free some conventional memory by loading your new DOS into the high-memory area. Just include the following line in your CONFIG.SYS file:

```
DEVICE=C:\DOS\HIMEM.SYS
DOS=HIGH
```

HIMEM.SYS manages extended memory; the DOS=HIGH command loads part of DOS, part of COMMAND.COM, and DOS's buffers into the high-memory area. This step will save you around 40K in conventional memory, making it available to other programs.

When you free up conventional memory, however, you may find that some programs suddenly give a "Packed File Corrupt" error message. When you load DOS high, other programs can now use the first 64K of conventional memory, which DOS usually occupies. But some programs can't function when loaded that low. (Borland's Sidekick 2 was one I encountered soon after I upgraded.) If you get this error message, you can use the LOADFIX command to force the problem program to load above 64K. Simply insert LOADFIX in front of the command that starts the program, as follows:

```
LOADFIX C:\SK2\SK2
```

If you need more memory on an 8088 or 286 than DOS itself can provide, you can purchase one of the following utilities that will let you use upper memory and/or the high-memory area (if you have an 8088, you'll likely need an expanded memory board): **NetRoom**, from Helix Software (47-09 30th Street, Long Island City, NY 11101; 800-451-0551); **QRAM**, from Quarterdeck Office Systems (150 Pico Boulevard, Santa Monica, CA 90405; 310-392-9851); **Move'em**, from Qualitas, Inc. (7101 Wisconsin Avenue, Suite 1386, Bethesda, MD 20814; 800-733-1377).

—K.J.

very limited DIR found in earlier DOS versions. They let you search subdirectories; sort by name, extension, date, or size; list files and directories separately; and limit the display of files based on attributes (such as hidden and read-only).

- **The DOS Shell.** Believe it or not, a graphics-based DOS interface on an 8088 or 286 is possible, as is a form of task switching, thanks to DOSSHELL. If you struggled with the Shell program in DOS 4.0, the newer DOSSHELL introduced in version 5 will be a dream. Unfortunately, Microsoft doesn't include DOSSHELL with MS-DOS 6.2, but you can find it in the MS-DOS 6.2 Resource Kit. (See the manual for ordering details.)
- **Safe FORMAT and UNFORMAT.** FORMAT now does a "safe" format of a previously formatted disk, which lets it rest unformatted. Unlike earlier versions of DOS, later editions let you recover from accidental formats via UNFORMAT.
- **Better backups.** The notorious BACKUP and RESTORE commands, introduced way back in version 2.0, have been replaced by version 6.2's MSBACKUP program, which lets you back up and restore files easily through a graphical interface.
- **New disk utilities.** Unlike the earliest DOS versions, DOS 6.2 includes programs to defragment files (DEFRAG) and to check for and repair disk damage (SCANDISK). SCANDISK offers more functionality and is easier to use than CHKDSK, which it's meant to replace.
- **New start-up options.** Even with an 8088 or 286, you can completely bypass CONFIG.SYS and AUTOEXEC.BAT when booting, or prompt the machine to execute each line in the two files. DOS 6.2 lets you create a start-up menu for different configurations, selecting the one to use each time you boot up.

Other little improvements also make working in DOS easier. A variety of enhancements include a MOVE command for moving files, and a warning before overwriting files with COPY, XCOPY, or MOVE. DISKCOPY can now copy in one pass—no more swapping disks back and forth. The CHOICE command lets your batch files ask for input and act on it. Output is easier to read, with thousands separators in numbers (as in "356,000 bytes free"). Unfortunately, DOS has yet to learn to count; "1 file(s) copied" messages still abound.

New and Improved Utilities

Although upgrading DOS for improved memory isn't a consideration if you own an 8088, and might be just a slight one if you have a 286, another big selling point is DOS's collection of new and often significantly improved utilities. Format recovery, disk compression, virus protection, disk repair, disk caching, an easier command line, a file defragmenter—all of these await you with an MS-DOS upgrade—if you have the RAM.

For example, 8088 users can't take advantage of memory management or SmartDrive, but (par-

A BRIEF HISTORY OF MS-DOS

As new hardware has developed since the birth of the PC, DOS has evolved to support it. Each MS-DOS version has carried a version number (6.22, for example), consisting of the major release number, followed by the minor-release and maintenance-release designations after the period.

Like any evolving creature, DOS has seen both big breakthroughs and not-so-dramatic changes (also one or two false starts). The following is a brief history of MS-DOS:

- **DOS 1.0.** The original ancestor, developed for the IBM PC. It supported one-sided 180K disks and included basic commands such as COPY, DIR, and FORMAT, plus the batch-file interpreter.
- **DOS 1.1.** Added support for double-sided 360K disks.
- **DOS 2.0.** A major revision to support the IBM XT and its 10MB hard drive. A new file system incorporating subdirectories was introduced. New commands included PRINT, BACKUP, RESTORE, TREE, MD, CD, and RD. I/O redirection was added; the batch language was enhanced with GOTO, ECHO, and IF.
- **DOS 2.1.** Corrected bugs in version 2.0.
- **DOS 3.0.** Introduced along with the IBM AT (286) computer. It supported high-density 1.2MB disk drives, and added the ATTRIB, SHARE, and LABEL commands.
- **DOS 3.1.** Appeared only a few months after version 3.0. It added network support and the JOIN and SUBST commands.
- **DOS 3.2.** Supported 3.5-inch 720K drives, added the /E switch for the SHELL command to specify the DOS environment size, and introduced the XCOPY and REPLACE commands.
- **DOS 3.3.** Was the last and most significant of the DOS 3.x series. It added support for 3.5-inch 1.44MB disks. BACKUP and RESTORE were made more user-friendly. DATE and TIME were added to set the CMOS clock/calendar. Batch files were enhanced with the CALL and @ commands, and the ability to test environment variables.
- **DOS 4.0.** Written primarily by IBM programmers. It included several technological advances, such as support for hard disks larger than 32MB, expanded-memory usage for commands such as BUFFERS and FASTOPEN, and a graphics-based user interface in DOSSHELL. The new MEM command provided information on memory usage, and TSRs could be loaded in CONFIG.SYS with the INSTALL command. Unfortunately, DOS 4.0 contained several bugs, and was incompatible with some programs (such as utilities that couldn't handle the larger disk sizes).
- **DOS 4.01.** A bug fix for version 4.0. Most users, however, chose to stay with DOS 3.x and its reliability rather than upgrade to version 4.
- **DOS 5.** Another major upgrade, and one that was very profitable for Microsoft. It introduced memory management to 386 users with EMM386.EXE, with the ability to load programs into upper-memory blocks and DOS into the high-memory area. Disk-management tools included UNDELETE, UNFORMAT, MIRROR, and SmartDrive. DOSSHELL was improved and given task-swapping capabilities. The QBasic interpreter replaced GW-Basic and BasicA, and with it came EDIT.COM, a full-screen text editor. DOSKEY was introduced, and the MEM, ATTRIB, and DIR commands were enhanced.
- **DOS 6.0.** Another significant upgrade. Features included integrated disk compression with DBLSPACE; new backup, undelete, and antivirus utilities; automatic memory optimization with MEMMAKER; a new version of SmartDrive; better on-line Help; multiconfiguration start-up menus; the MOVE and DELTREE commands; a disk defragmenter; and laptop utilities.
- **DOS 6.20.** Introduced partially as a response to reported data-integrity problems with DoubleSpace and SmartDrive. DoubleSpace was made "safer" with DoubleGuard, which monitors for data corruption. ScanDisk, a disk-repair utility meant to replace CHKDSK, arrived. SmartDrive wouldn't return to the DOS prompt before writing cached data. MOVE, COPY, and XCOPY provided overwrite warnings, and DISKCOPY could finally do a one-pass duplication. HIMEM.SYS would automatically check extended memory on bootup. The /Y switch for COMMAND.COM let you step through each line of a batch file for debugging.
- **DOS 6.21.** A maintenance release that no longer included disk compression. This was the result of Stac Electronics' lawsuit with Microsoft over DoubleSpace's technique.
- **DOS 6.22.** Disk compression added again with DriveSpace. No new functionality over version 6.20.
- **DOS 7.0.** In the wings. Unlike Windows 3.1, the upcoming Windows 95 will be an operating system that doesn't run on top of DOS. Windows 95's DOS "components," though, may be released as a new DOS version—particularly because IBM has already released a PC-DOS 7.0. We should see Microsoft's response later this year.

—K.J.

ticularly if you have expanded memory) you can have virus protection, undelete and unformat capabilities, and an easier time at the command line. Most 286 users with extended memory can immediately reclaim about 40K of conventional memory by using HIMEM.SYS and DOS=HIGH in CONFIG.SYS. You can also speed up performance with SmartDrive, plus you'll have access to virus protection, undelete and unformat programs, and disk utilities.

Disk caching is one of the best ways to improve the speed and performance of your PC, and MS-DOS has included the SmartDrive cache since version 5. The newest SmartDrive requires extended memory and HIMEM.SYS (or another XMS manager), because Microsoft believes that the 640K of conventional memory is so precious it shouldn't be wasted on a disk cache. Instead, the cache is put into memory that's not so heavily used: extended memory.

Although memory requirements preclude an 8088 from employing SmartDrive, the good news is that you can find disk caches that will run on an 8088 with expanded memory. And if you have a 286 with extended memory and an XMS manager, you *can* use SmartDrive. Although the cache itself is stored in extended memory, the SmartDrive program takes up about 28K of conventional memory on a 286. In a 386 or later processor, SmartDrive will load itself automatically into upper memory and so takes no conventional memory at all.

Virus protection is another benefit of upgrading for either an 8088 or a 286. MS-DOS 6.2 offers two levels: MSAV, a program that checks memory, the disk's boot sector, and executable files for viruses; and VSAFE, a TSR (terminate-and-stay-resident) program that provides active virus monitoring and warns you if a virus could be attacking your system. (You may, however, want to invest in a more comprehensive third-party antivirus program—one that will be updated continually to detect and eradicate new viruses as they come along.)

Although VSAFE offers the highest level of protection because it's always running, the question again becomes: Does your PC have the memory to spare? VSAFE, for example, takes a whopping 44K of conventional memory when running as a TSR. It can, however, use expanded or extended memory, and definitely has a liking for expanded. If expanded memory is available, it will use 7K of conventional and 64K of expanded. With extended memory, VSAFE uses 23K conventional and 23K extended.

So, if your 8088 doesn't have an expanded-memory board, using 44K of conventional memory for VSAFE may take away too much memory that other programs need. In such a case, you should probably run MSAV at regular intervals to check your disk. If you have a 286 with only extended memory, losing 23K of conventional memory may interfere with other programs. But if your 8088 or 286 has expanded memory, loading VSAFE is an easy choice; 7K of conventional memory will probably never be missed.

The ability to undelete files is another important benefit of upgrading MS-DOS. The UNDELETE command was added in version 5, but it couldn't always undelete the files you needed. In MS-DOS 6.x, a new undelete method, called Delete Sentry, was added. "Deleted" files are moved to a hidden directory, and can be undeleted with certainty as long as too much time hasn't passed since the deletion. (Typically, it keeps files seven days.)

Both 8088 and 286 users can take advantage of delete protection with UNDELETE, because it requires only about 13K of conventional memory. Even if you don't run the TSR, you can still use UNDELETE to restore files from the DOS level, though success is less certain.

Disk compression is also available if you upgrade your 8088 or 286 computer, though the DriveSpace program can take a significant amount of conventional memory. If you have a 286 with extended memory and include DOS=HIGH in CONFIG.SYS, part of the DriveSpace program will be moved into the high-memory area, freeing up some conventional memory.

Version? What Version?

If you decide to upgrade your 8088 or 286 to the newest release of MS-DOS, some of your programs may complain of "Incorrect DOS Version." If that happens, you'll need the SETVER.EXE driver.

Some older programs were written to require a specific version of DOS, such as 3.3 or 5, because they used techniques not available in earlier versions. Unfortunately, these programs didn't anticipate newer DOS versions that still included techniques used in earlier versions. SETVER contains a table listing the required version number for many of these programs. When the program queries the version number, SETVER "lies" and reports the version the program is looking for, so the program can run.

To look at your current SETVER version table, simply enter SETVER on the command line. If you encounter a program requiring a certain version not in the table, add it manually:

```
SETVER HCOPTER.EXE 3.3
```

This example adds HCOPTER.EXE to the version table; SETVER will report DOS 3.3 when the program loads.

Time in a Bottle

If you're still running an 8088 or 286 PC, don't let the MS-DOS upgrades pass you by. Though MS-DOS 6.x was heavily marketed to 386, 486, and Pentium users, there are enough new features and improvements to make the upgrade worthwhile for everyone. You may not be able to run all the newfangled software on the market, but nonetheless, new wine in old bottles can be valuable. ■

Readers' Queue

Ask ASCII.BAS

When I need to know an ASCII value, I don't waste time hunting down the right reference manual and the right page number. Instead, I call on two programs, ASCII.BAT and ASCII.BAS, which together provide the information I want. ASCII.BAT (below right) acts as a "front man" for ASCII.BAS (page 54, top), passing it information when conditions are right.

When you start the batch file by typing `ASCII /?`, you receive advice on getting ASCII equivalents. The rules are simple. You may include as many parameters as you like, separating them with spaces, commas, or semicolons.

Note that you may type a letter or number key, a decimal or hexadecimal number, or a key combination, such as Alt+235 or Ctrl+Z. You must preface hex numbers with *&h* or *&H*, though.

If you start ASCII.BAT and don't provide a parameter, the fifth line of ASCII.BAT loads QBasic and runs ASCII.BAS, which jumps to the subroutine called CHART and prints a complete ASCII table on screen.

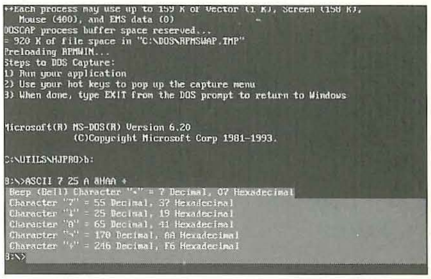
If you provide one or more parameters, ASCII.BAT feeds them to ASCII.BAS one at a time, displaying each equivalent on a separate line. For example, if you type this command:

```
ASCII 7 A &HAA ÷
```

you'll see output like that shown in the accompanying screen shot, "How ASCII.BAT handles multiple parameters" (top right). If you provide an illegal parameter, the program issues an error message and displays ASCII.BAT's help screen.

Of course, for the two programs to work, DOS must be able to find the files it needs. Be sure to store QBASIC.EXE in a directory listed in your PATH statement or include a path in the QBASIC /RUN command. Likewise, if ASCII.BAT isn't in the current directory, add its path to the QBASIC /RUN command.

Peter Norton
Felton, California



```
→Each process may use up to 159 K of Vector (1 K), Screen (158 K),
  Mouse (400), and EMS data (0)
DOSCAP process buffer space reserved...
= 920 K of file space in "C:\DOS\RPMSWAP.TMP"
Preloading RPMWIN...
Steps to DOS Capture:
1) Run your application
2) Use your hot keys to pop up the capture menu
3) When done, type EXIT from the DOS prompt to return to Windows


Microsoft(R) MS-DOS(R) Version 6.20
             (C)Copyright Microsoft Corp 1981-1993.

C:\UTILS\HJPRO>b:

B:\>ASCII 7 25 A &HAA ÷
 Beep (Bell) Character "•" = 7 Decimal, 07 Hexadecimal
 Character "7" = 55 Decimal, 37 Hexadecimal
 Character "↓" = 25 Decimal, 19 Hexadecimal
 Character "A" = 65 Decimal, 41 Hexadecimal
 Character "¬" = 170 Decimal, AA Hexadecimal
 Character "÷" = 246 Decimal, F6 Hexadecimal
B:\>
```

How ASCII.BAT handles multiple parameters. If you provide one or more parameters when you start ASCII.BAT, the equivalents for each parameter are displayed on separate lines.

Use ASCII.BAT to control the operation of ASCII.BAS.

```
@ECHO OFF
ECHO.
ECHO For advice on using this batch file,
ECHO type: ASCII /?.
ECHO.
IF %1!==/?! GOTO HELP
:TOP
SET ASCII=%1
QBASIC /RUN ASCII.BAS
SET ASCII=
IF %2!==! GOTO END
SHIFT
GOTO TOP
:HELP
ECHO.
ECHO  Syntax: %0 [codes ...] [characters...]
ECHO  You may include any number of characters and codes,
ECHO  separating them with spaces, commas, or semicolons.
ECHO.
ECHO  You may provide letter or number keys, decimal or
hexadecimal
ECHO  numbers, and key combinations such as Ctrl+A. But you must
ECHO  precede hex numbers with &h or &H (for example, &H0A).
ECHO.
ECHO  If you type ASCII at the DOS prompt, the program prints
ECHO  the entire ASCII chart on screen.
:END
```

End

ASCII.BAS provides a complete chart of ASCII characters or the equivalents for the parameters you specify when starting ASCII.BAT. Note that in line 4, &HB800 works for color adapters only; use &HB000 if you have a monochrome adapter.

```
DECLARE SUB CHART ()
DECLARE SUB DECODE (CODE)
DECLARE SUB SPECIAL (CODE)
DEF SEG = &HB800   'Video segment address for pokes
CODE$ = ENVIRON$("ASCII")       'Variable set in
  batch file
CODE = VAL(CODE$)
    COLOR 14, 1
    IF CODE$ = "" THEN CHART   'Print chart and exit
    SPECIAL CODE             'Print special meaning
    IF CODE THEN DECODE CODE   'Decode if a number
    IF LEN(CODE$) = 1 THEN
        CODE = ASC(CODE$)
        DECODE CODE    'Decode if single character
    END IF
    IF CODE = 0 THEN
        PRINT " Invalid parameter - "; CODE$;
        SHELL "ASCII /?"     'Print usage message
    END IF
SYSTEM

SUB CHART
    CLS
    A = 3          'A = cursor position for POKE
    FOR I = 1 TO 9         'I = ASCII code
        PRINT I; SPACE$(4);
        POKE A * 2, I    'Position * 2 for attributes
        A = A + 7
    NEXT I
    A = A + 1
    FOR I = 10 TO 99
        PRINT I; SPACE$(3);
        POKE A * 2, I
        A = A + 7
        IF I MOD 11 = 0 THEN A = A + 3   'Advance
          at end of line
    NEXT I
    A = A + 1
    FOR I = 100 TO 255
        PRINT I; SPACE$(2);
        POKE A * 2, I
        A = A + 7
        IF I MOD 11 = 0 THEN A = A + 3
    NEXT I
    COLOR 15
    PRINT "     Press any key to continue . . .";
    DO
        LOOP WHILE INKEY$ = ""
    PRINT
    SYSTEM
END SUB

SUB DECODE (CODE)
    PRINT " Character "; CHR$(34); " "; CHR$(34);
    POKE (((CSRLIN - 1) * 80) + (POS(0) - 3)) *
      2, CODE
    PRINT " ="; CODE; "Decimal, ";
    HEXVALUE$ = HEX$(CODE)
    IF LEN(HEXVALUE$) = 1 THEN HEXVALUE$ = "0" +
      HEXVALUE$
    PRINT HEXVALUE$; " HEXADECIMAL"
END SUB

SUB SPECIAL (CODE)
    SELECT CASE CODE
        CASE IS = 7
            PRINT " Beep (Bell)";
        CASE IS = 8
            PRINT " Backspace";
        CASE IS = 9
            PRINT " Tab";
        CASE IS = 10
            PRINT " Line feed";
        CASE IS = 12
            PRINT " Page eject";
        CASE IS = 13
            PRINT " Carriage return";
       CASE IS = 26
            PRINT " End of file";
        CASE IS = 27
            PRINT " Escape";
        CASE IS = 32
            PRINT " Space";
    END SELECT
END SUB
```

End

DOS TIP

COMPUTING MEMORY SAVINGS

If you want to know how much conventional memory you're saving by using a DOS=HIGH command in your CONFIG.SYS file, type this command at the DOS prompt:

```
MEM /A
```

The next-to-the-last line of information, "Available space in High Memory Area," tells how much room is free in the HMA. By definition, the HMA is the first 64K above the 1MB mark, so to compute your memory savings, subtract the figure MEM /A displays from 64K.

—Ken Johnson

START-UP CLINIC

Missing Disks And Mysterious Files

by Jack Nimersheim

Maybe I should get a job writing for *The National Enquirer*. Don't worry—I haven't photographed Bigfoot or taken a joyride on a UFO. But this month's mailbag did contain a couple of cautionary tales dealing with an invisible disk and inexplicable files.

The two phenomena in question provide concrete examples of how computers can confound your senses if you don't understand what goes on in DOS's digital domain.

> *Strange-but-true examples of how computers can confound you, and answers to help you get back on your feet.*

The Case of the Vanishing Files

I recently created a floppy system disk with The Norton Utilities' NDOS. After starting my system with this floppy disk, my hard drive seemed to have been wiped clean. The only file a DIR C: command revealed was SPINRITE.LOG. When I removed the floppy and rebooted directly from the hard disk, everything was okay again. What happened? If it helps, my system, which runs under Compaq DOS 6.0, includes a compressed drive C created with DoubleSpace.

Tom J. Wrubel
West Orange, New Jersey

Your last statement explains *exactly* what's causing the contents of your hard disk to seemingly "disappear" whenever you boot your system from that floppy disk; the key to your conundrum is DoubleSpace.

DoubleSpace doesn't modify your hard disk permanently to create a compressed drive and then step out of the way forever. Instead, it relies on a special device driver to compress and decompress individual files on a continuous basis. DOS uses a statement contained in the CONFIG.SYS file to load this device driver into memory each time you turn on your computer. I bet that a line similar to the following exists in the CONFIG.SYS file on your hard drive:

```
DEVICE=C:\DOS\DBLSPACE.SYS
```

Conversely, I'd wager that the line is missing from the CONFIG.SYS file on the emergency floppy you created with NDOS. Without it, the DBLSPACE.SYS device driver isn't loading into memory during system startup. And without that device driver, DOS can't recognize your compressed drive C. To solve your problem, then, print the contents of the CONFIG.SYS file from your hard drive (for reference), and insert the appropriate line into that same file on the floppy disk.

Anyone who creates an emergency boot disk should make certain that its CONFIG.SYS and AUTOEXEC.BAT files contain all the statements required to bring your system up to full operation. That includes device drivers, PATH statements, and any other programs or utilities you normally load during start-up.

Secret Lists

Help! What is this CHKLST.MS file that appears in every directory on my hard disk? Are these duplicate files important, what purpose do they serve, and is it safe to erase them?

Jeffrey Kautz
Reno, Nevada

Welcome to the wonderful world of system security. Those mysterious files proliferating across your hard disk are some of the tools Microsoft's two virus-protection utilities use to keep rogue code from invading your PC. MSAV, Microsoft's antivirus scanning utility, creates a file named CHKLST.MS in each directory and subdirectory on the drive it's testing. This file contains the size, attributes, and date/time stamp of any program files stored in that directory. MSAV also records a CHECKSUM for each file: a unique value calculated from the file's contents. The only reason a given file's CHECKSUM would ever change, therefore, is that you've modified that file's contents.

Each subsequent time you scan a disk with MSAV, it compares a file's current CHECKSUM with the value recorded in CHKLST.MS during that initial pass. As a rule, the contents of executable files should never change. Whenever MSAV detects a change in a file's CHECKSUM, therefore, it alerts you—indicating a possible virus infection. Deleting all those CHKLST.MS files won't adversely affect your system's performance—at least not immediately. It will limit DOS's ability to protect your computer against future virus attack, though. You must weigh these two options—more storage space versus ongoing virus protection—against each another, then determine which one is more desirable.

Preserving Memory

My computer appears to run better when I don't load EMM386, yet many people recommend that I use it. How does this DOS memory manager work and which is more reliable—my own observation or the advice I've received?

Stephen Volkmann
Brampton, Ontario, Canada

If you can use EMM386, you should. Memory is one of your PC's most precious resources; any utility that makes more memory available to DOS or your application programs is worth using, even if you must sacrifice some speed to do so. Having said that, let's see whether we can figure out why EMM386 seems to be affecting your PC's system performance adversely.

One of EMM386's primary functions is configuring extended memory to be used as expanded memory. Is your system's extended memory installed on the motherboard, or are you using a third-party memory card? If the latter, the expansion card may contain older and slower RAM chips, which could cause a drop in system performance when running EMM386, especially if you're using the NOEMS switch and a DOS=UMB statement to make upper memory available to DOS. Under this setup, EMM386 "borrows" memory for its UMBs (upper-memory blocks) from extended memory, which in turn would slow any DOS operations running in UMBs relocated to older RAM chips.

Do you use Windows and, if you do, is the slowdown particularly noticeable when you're working in it? If so, check to see whether the EMM386 statement in your CONFIG.SYS file contains a WIN parameter. WIN reserves a range of upper memory for Windows operations, rather than freeing it up for the relocation of utilities and various other DOS-related operations. Windows users should therefore include the WIN parameter. Conversely, if you're not a Windows user and the WIN parameter appears in the EMM386 statement in your CONFIG.SYS file, remove it.

Peak system performance depends on using your EMM386 options correctly. Don't try setting up your EMM386 statement manually unless you understand how its various switches and parameters work. A better approach for nontechnical users is to run DOS's MEMMAKER utility. It uses a question-and-answer format to set up an EMM386 statement for CONFIG.SYS, one that's appropriate for your system.

Computing Power to the People

What does each of the following lines (from a recent AUTOEXEC.BAT file listing in DOS World*) do?*

```
C:\STACKER\CHECK /WP
PAUSE  Turn on printer!
C:\UTILS\ALTPAUSE
```

Joe Winkler
Gallup, New Mexico

Welcome to the ranks of the PC revolution, Joe. Mastering computers isn't always an easy undertaking, but the rewards are well worth it.

The key to understanding how a batch file works is to realize that every one of its lines either corresponds to a program or a DOS command you'd normally enter at the system prompt, or is one of the two dozen or so internal batch-file commands DOS supports. The lines you cited contain examples of each.

The first and third lines are commands associated with specific programs. The CHECK command runs a Stacker utility that provides information about a compressed drive. This particular command includes a /WP switch, which instructs CHECK to quickly search the compressed file and determine whether there has been any loss of data integrity. The third line runs a program called ALTPAUSE, stored in this system's \UTILS subdirectory.

The middle line uses PAUSE, a special batch command, to halt batch-file execution temporarily and display the specified message ("Turn on printer!"), followed by "Press any key to continue." Your DOS manual contains additional information about all the commands you can incorporate into your batch files. ■

Jack Nimersheim has been using computers and writing about them for 15 years. He's the author of more than two dozen books on computer-related topics, including six on telecommunications.

WINDOWS SEAT

Mining for DOS In Win95

by Robert L. Hummel

Based solely on the hype surrounding the release of Windows 95, you'd be justified in thinking that this new version of Windows was something radically different. If you believe Microsoft, this version of Windows trumpets the end of DOS as we know it. Fortunately, that's far from the truth.

Windows 95 is simply a long-overdue upgrade to Windows 3.x. In terms of architecture, operation, and relationship to DOS, Windows 95 is nearly indistinguishable from 3.x. For those of us who still cling stubbornly to our efficient command line, eschewing the pretty for the productive, that's good news.

> *In Windows 95, Microsoft has done its best to hide DOS and the command line from the casual user.*

But one problem you'll encounter if you make the switch to Windows 95 is finding the friendly DOS prompt. For marketing reasons, Microsoft has done its best to hide DOS and the command line from the casual user. If you're used to booting up in DOS and going into Windows only when necessary, here's how to restore your old productivity.

DOS Lives!

By now, you're sure to have heard that famous Microsoft claim: that Windows 95 is a complete standalone operating system, no longer requiring a separate copy of DOS in order to run. But the key to defending this claim as truth lies in the weasel-phrase "separate copy of DOS."

The fact is that Windows 95 still requires a copy of DOS—you just don't have to purchase one separately. Rather than use the copy of DOS already installed on your PC, Windows 95 simply provides its own version of DOS during its installation process.

When Windows 95 boots, it first loads DOS, which initializes your PC. The new (internal) equivalents of the CONFIG.SYS and AUTOEXEC.BAT files then load automatically the required memory managers and configuration information needed for Windows to run. Finally, the whole boot process culminates when the WIN command is issued internally, thus starting the Windows interface shell.

It's Microsoft's fondest hope that suppressing the DOS prompt will give Windows 95 a more monolithic appearance and thus remove one major piece of ammunition its critics use to deride it as a mere DOS shell. One big drawback to this position is that DOS users who want to run a Windows program only occasionally would indeed seem to be stuck running Windows all the time!

Fortunately for diehard DOS fans, there are four ways to regain control of your machine and display a real DOS prompt:

ATTENTION

WINDOWS USERS

If you use Windows regularly, you probably know a few tricks yourself. Or perhaps you've found a better way to do the job described here. This column is your chance to share your techniques with other Windows users. Contact the Windows Editor at DOS World, *86 Elm Street, Peterborough, NH 03458, or on CompuServe (**75300,2361**), the Internet (**75300.2361@compuserve.com** or **editors@iway-.mv.com**), or MCI Mail (**667-4854**).*

The boot menu. The first method requires some quick keyboard action. When you boot Windows 95, you'll hear a beep and see the "Starting Windows 95 . . ." message displayed on your screen. (It replaces the old "Starting MS-DOS . . ." message.) At this point, press the F8 key to activate the boot menu, which looks like this:

```
      Microsoft Windows 95 Startup Menu

1. Normal
2. Logged (\BOOTLOG.TXT)
3. Safe mode
4. Safe mode with network support
5. Step-by-step confirmation
6. Command prompt only
7. Safe mode command prompt only
8. Previous version of MS-DOS

Enter a choice:
```

Of the eight options shown, only four are relevant for DOS users:

- Option 1 (Normal) starts Windows the usual way—as though you hadn't interrupted it by pressing the F8 function key.

- Option 6 (Command prompt only) starts your computer, loads all support files normally required for Windows 95, but doesn't start Windows itself. The command prompt you see is provided by the new version of DOS installed by Windows 95. Although some publications (including this one) have dubbed this MS-DOS 7, it identifies itself as Windows 95 Version 4 in response to the VER command.

This new DOS is simply another version of the same real-mode DOS we've known and loved. All the expected internal DOS commands (such as DIR, DEL, and COPY) are supported by the new DOS's COMMAND.COM. And the usual external DOS commands (including CHKDSK, FORMAT, and DEBUG) are located in the \WINDOWS\COMMAND subdirectory. And, as in previous versions of DOS and Windows, you can launch Windows from the command prompt with WIN.

- Option 7 (Safe mode command prompt only) starts your computer with a clean DOS configuration instead of the usual Windows 95 setup. In other words, your CONFIG.SYS and AUTOEXEC.BAT files aren't processed. This options lets you get control of your system in the event that an errant program or device driver is preventing a successful boot.

- Finally, option 8 (Previous version of MS-DOS) starts DOS using the DOS files that were renamed during Windows setup. The version of DOS your system starts obviously depends on what you were running beforeWindows 95. Your old CONFIG.SYS and AUTOEXEC.BAT files are also processed.

MS-DOS mode. Under Windows 3.x, getting back to DOS was easy—you simply quit Windows. But under Windows 95, you can't go back to DOS, because (in Microsoft-think) you were never really there to begin with. Nonetheless, Microsoft wisely recognizes that many programs (especially games) require more performance from the underlying hardware than Windows can provide.

To exit the Windows 95 environment and return to real-mode DOS, select the Shut Down option from the Start menu; then select the "Restart the computer in MS-DOS mode?" option. "MS-DOS mode" is just Microsoft's latest euphemism for plain old DOS.

Activating this way does have one distinct difference from the other techniques we'll discuss: You have about 3K less memory in which to execute your programs. When you select MS-DOS mode, Windows leaves a small stub of a loader program in memory. Its sole purpose is to let you start Windows by typing `EXIT`—further reinforcing the mirage that Windows is somehow in control of everything. You'll find that simply typing `WIN` works just as well.

Back-door DOS. As mentioned above, if you boot your PC to the command prompt, you can launch Windows with the WIN command. But Windows 95 doesn't give you a simple way of returning to that same prompt. If you select MS-DOS Mode from the Shut Down menu, you're stuck with the 3K Windows program stub in memory. Fortunately, there's another method of exiting Windows. It's undocu-

DOS TIP

GOING UP!

You probably know that the command CD .. moves you to the "parent" directory (the one above the current directory), and that CD \ moves you to the root directory. Although DOS provides no way to move up two subdirectories at once—to the "grandparent" of the current directory—you may create a DOSKEY macro that lets you do that by typing three periods:

```
DOSKEY ...=CD .. $T CD ..
```

This macro works because DOSKEY macro names don't have the same limitations as DOS filenames. You may include these "illegal" DOS characters in DOSKEY macro names: * ? + . / : ; [ ]

—**Ken Johnson**

mented, and it's pretty clear that Microsoft really doesn't want you to know about it.

From the Shut Down menu, instead of selecting the MS-DOS mode option, select the "Shut down the computer?" option. Windows will save whatever information it needs to, then display the message "It's now safe to turn off your computer" on your screen in an attractive graphics font. It appears as though Windows has shut down all activity on your PC and is simply waiting for you to turn off your computer or reboot. But the truth is that you're really sitting at the DOS prompt!

To display its shut-down message, Windows shoves your video card into a high-numbered graphics mode (mode 19 on my PC), displays its message, then hides the DOS prompt. To recover control of your PC, simply type the command `MODE CO80` and press Enter. In a flash you'll be staring at the friendly DOS prompt again.

This method of exiting Windows leaves no stub loader in memory, freeing up an additional 3K for your applications. But note that this trick works only if you've started Windows 95 with the WIN command. To restart Windows, just type `WIN`.

Hacking Windows. For me, the three previous methods for getting to a DOS prompt come up somewhat lacking. The first requires perfect timing, and the second two require that you first load, then exit Windows—a real waste of time. Fortunately, there's a way to reprogram the DOS/Windows 95 system so that it boots to a DOS prompt by default—just the way your DOS/Windows 3.x system does now.

As noted above, during installation Windows 95 renames your old DOS system files and replaces them with the new DOS files. Under the new DOS, the IO.SYS and MSDOS.SYS files have been combined into a single file called IO.SYS. The file MSDOS.SYS is now a hidden text file containing boot directives for DOS. Changing Windows 95's default operation requires a single simple edit to this text file.

First, start a Windows 95 DOS prompt: a DOS session, MS-DOS mode, or command prompt from the boot menu. You must be running some form of the new DOS; you can't perform this procedure under your old version. At the command prompt, enter:

```
ATTRIB -R -H -S MSDOS.SYS
EDIT MSDOS.SYS
```

The first command removes the read-only, hidden, and system attributes from the MSDOS.SYS file so that you can edit it. The second starts the DOS Edit program. The file resembles a typical Windows INI file.

Under the [Options] heading, locate the line BootGUI=1. To boot your machine to the DOS prompt instead of the Windows 95 shell, simply change this to read BootGUI=0. Save your changes and exit the editor. Finally, restore the file's attributes with the following command:

```
ATTRIB +R +H +S MSDOS.SYS
```

The next time you reboot your PC, Windows 95 will display a graphical introduction screen, then drop immediately to the DOS prompt. To start Windows at any time, simply type `WIN`.

Just the Beginning

I've touched on only a few techniques that let you make your Windows 95 installation more compatible with the behavior of previous Windows versions. But there's much more undocumented power within Win95's new DOS. More on that in the months ahead. ■

Contributing Editor Robert L. Hummel is the author of PC Magazine Programmer's Technical Reference: The Processor and Coprocessor, Data and Fax Communications, *and* Assembly Language Lab Notes *(all from Ziff-Davis Press, 1992).*

QBasic TIP

POWER PASTING IN QBASIC

When you're working on a new QBasic program, you often want to reuse routines from other programs you've written. Copying a single block of code from one program to another is easy: Highlight the lines you want to use, pull down the Edit menu, and click on Copy. Then load the new program, position the cursor where you want to place the block, open the Edit menu, and click on Paste.

Copying several blocks of text from one program to another is trickier, because QBasic's clipboard holds only one block of text at a time. If you try to copy a second block to the clipboard, the previous contents are overwritten. To sidestep this limitation, use the Immediate window as a temporary text buffer.

First, enlarge the Immediate window by clicking on the up arrow at the right edge of the screen. Highlight the first block you want to move, open the Edit menu, and click on Copy. Then switch to the Immediate window, position the cursor, and select Edit/Paste to copy the block to that window. Repeat the procedure until you've copied all the blocks you need to the Immediate window.

Next, open the File menu and load the program into which you want to paste the text. Switch back to the Immediate window, highlight the block you want to paste, and click on the Edit menu's Copy option. Switch to the Program window and paste the block of code into place. Continue highlighting and pasting until you've copied all the blocks.

—Richard Penn

DOS WORLD

Q&A

Edited by Doug Lowe

HARDWARE

Q I recently added a 5.25-inch floppy-disk drive to my system, and now drive A, a 3.5-inch drive, is acting up. If I take a directory of the disk in drive A, then insert another disk into the drive and type `DIR` again, I still see the file list from the first disk. Do you know what happened and how I can fix it?

A Without more information, I can't say for certain what's going on, but the problem may be related to your drive's change-line detection.

MS-DOS uses change-line information to determine when you've changed disks in a floppy drive. If the change line malfunctions, MS-DOS isn't aware that you've changed disks, so it simply reads directory information from its internal buffer.

Naturally, that's dangerous; if you attempt to write any information to the second disk, you'll probably damage the disk's directory beyond repair, losing all the files on the disk.

Here are a few things to check:

- Make sure your BIOS is set up properly for both drives. To do that, run your computer's setup program, and check that drive A is described as a 1.44MB 3.5-inch drive and that drive B is labeled as a 1.2MB 5.25-inch drive. Note that the setup programs for PCs vary according to the model and manufacturer, so you'll have to consult your computer's manual to find out how to start its setup program.
- Make sure the cables for the two floppy drives are properly seated; check the connections both at the drive units and at the floppy-drive controller board. If your 3.5-inch floppy-disk drive uses a small circuit board designed to adapt a 5.25-inch drive connector to a smaller size, make sure the board is connected firmly.
- Check to see whether the 3.5-inch drive has a jumper (a small switch) that enables or disables change-line support. If it does, make sure the jumper is in the right position; you may have dislodged it when you were installing the second drive.
- Try replacing the cable for the 3.5-inch floppy-disk drive. The wire that carries the change-line signal may be damaged.

If none of these approaches works, try adding the following line to your CONFIG.SYS file:

```
DRIVPARM=/D:0 /F:7
```

This sets up drive A as a 1.44MB drive without change-line support; it increases the time it take to access drive A, but it may solve your problem.

One final possibility is that the disk you're trying to read was formatted incorrectly. Sometimes, the type of problem you describe crops up if you format a 720K disk as a 1.44MB disk (or a 360K disk as a 1.2MB disk).

If you've been punching a hole in your low-density disks to make the computer think they're high-capacity disks, I advise you to reconsider. Disks altered this way simply aren't reliable, and you may end up losing valuable data that even the best data-recovery tool can't rescue.

Q When I buy a batch of disks and format them, every so often I get a bad disk. MS-DOS complains that the disk has a bad track zero, a missing sector, and so on. I used to throw away these disks, but I recently discovered that I can often salvage them by using a cassette-tape demagnetizer. After I demagnetize a bad disk, MS-DOS can format it. Is it safe to use such disks?

A I wouldn't store anything important on a demagnetized disk. Although the disk may seem to work fine for a while, the recording surface may well still have an underlying problem. If so, the disk will fail eventually, and you'll lose the data stored on the disk.

Q I have an IBM PS/2 Model 25 computer, with an 8086 microprocessor, 640K of memory, and a 720K floppy drive. I've also installed a 420MB hard-disk drive. Can I increase the memory in this old computer? Would it make sense to also replace the 720K drive with a heftier 1.44MB drive? Finally, can I upgrade the Model 25's motherboard, as well, to get better performance?

A I hate to be the bearer of bad news, but, if you want to run today's memory-, disk-, and processor-hungry programs, the only component worth keeping is the hard disk.

The only way to add more than 640K of memory to an 8086-based computer is to purchase an expanded memory (EMS) card, which you install in one of your computer's expansion slots. Unfortunately, only certain programs can use EMS, so that won't cure your memory problems.

Replacing the 720K floppy drive with a 1.44MB drive shouldn't be a problem, but you may need to upgrade the PS/2's BIOS chip to support the new drive.

Run the machine's setup program (as I mentioned above, your manual will tell you how) and see what options are available for that floppy-drive type.

Note that if you don't find a 1.44MB drive listed among the options, the system needs a BIOS upgrade.

Replacing the motherboard is possible, too. In fact, Reply Corporation, of San Jose, California (800-955-5295), manufactures a complete replacement motherboard, called **PowerBoard**, which can bring your aging PS/2 Model 25 up to 486 standards.

For $795, you get a Reply PowerBoard motherboard with a 50MHz 486DX2 processor, 4MB of RAM, a local-bus Super VGA graphics adapter, and built-in drive and I/O controllers.

By the time you complete all these upgrades, however, you may well have spent more money than if you simply purchased an entirely new computer.

The wiser course might be this: Before investing in an upgrade, see what kind of deal you can get on a new 66MHz 486DX2 without a hard disk.

If you're not up to installing the hard drive yourself, ask the computer dealer to put your old hard drive into the new system. It's worth the extra fee.

QBASIC

Q I'm new to QBasic. Could you publish a short primer on the PALETTE and PALETTE USING commands? I came across the command PALETTE 7,46 in a QBasic game, and I don't understand what it means.

A QBasic includes PALETTE and PALETTE USING commands because video cards can't display their entire range of colors at once. In standard text mode, for example, an EGA or VGA adapter can generate as many as 64 colors, but can show only 16 of them on screen at a time. The 16 colors currently selected for display are known as the palette.

By default, EGA and VGA adapters set the 16 slots of their palettes to the familiar text-mode colors: white, black, blue, cyan, yellow, and so on. Use the PALETTE or PALETTE USING commands to change the default palette, replacing colors you rarely employ with ones that might be more useful for a given program.

The PALETTE command uses the following syntax:

```
PALETTE attribute,color
```

The first parameter, *attribute*, is a number from zero through 15. It tells which of the 16 color "slots" you want to change. The second parameter, *color*, is a number from zero through 63. It indicates which of the 64 possible colors you want to pour into the slot specified by the attribute parameter.

So the command PALETTE 7,46 means that you want to assign attribute 7 to color 46. Then, whenever a QBasic command says to use color attribute 7, the program displays color 46.

The following QBasic program displays the 64 colors you may use in screen-mode zero:

```
SCREEN 0
FOR PAL = 0 TO 3
    CLS
    FOR ATR = 0 TO 15
        CLR = PAL * 16 + ATR
        PALETTE ATR, CLR
        COLOR ATR
        PRINT "ATTRIBUTE = "; ATR;
          " COLOR = "; CLR
    NEXT ATR
    WHILE INKEY$ = "": WEND
NEXT PAL
```

Because you may display only 16 colors at a time, it cycles through the 64 colors in four steps, showing the first 16 colors and then pausing. When you press a key, it displays the next 16 colors, and so on. (When you run this program, you see only 15 lines of color text on screen at a time. The 16th color is the background hue; it, too, changes each time you press a key.)

The PALETTE USING command provides a convenient way to change the entire palette with a single command by placing color values for all 16 attributes in an array. First, set up a 16-item integer array, using a command such as DIM PAL%(15). The 16 numbers in this array correspond to the 16 color attributes. (Remember that array dimensions begin with zero, so DIM PAL%(15) can hold 16 numbers.)

Next, set each item in the array to the color you want to use for the corresponding attribute. For example, to set palette-attribute 5 to color 23, use the command PAL%(5)=23. When all 16 attribute values in the array PAL% are set, use the command PALETTE USING PAL% to change colors.

Note that the number of attributes in the palette and the total number of colors available depend on which SCREEN command is in effect. You can use QBasic's on-line help to find out how many attributes and colors are available in each screen mode. ■

Contributing Editor Doug Lowe is the author of 15 computer books, including The Only DOS Book You'll Ever Need *(Murach).*

How to Use

REPLACEABLE TEXT

Articles in *DOS World* will often give you a command that includes text you must replace with your own information. This replaceable text is in italics. For example, in the following command, you'd replace *filename* with the name of your own file:

```
COPY A:filename B:filename
```

THE CONFIG.SYS FILE

In your root directory is a file called CONFIG.SYS. Like AUTOEXEC.BAT, this file is in ASCII, and you can view your CONFIG.SYS file with the TYPE command. A typical CONFIG.SYS might look like this:

```
DEVICE=C:\DOS\HIMEM.SYS
DEVICE=C:\DOS\EMM386.EXE NOEMS
DOS=HIGH,UMB
FILES=50
BUFFERS=10
SHELL=C:\DOS\COMMAND.COM
  C:\DOS\ /E:1024 /P
DEVICE=C:\DOS\ANSI.SYS
DEVICE=C:\DOS\SETVER.EXE
```

The rules for handling CONFIG.SYS are the same as they are for AUTOEXEC.BAT: Always back up the original file before you modify it and always have an emergency boot disk available. As with AUTOEXEC.BAT, changes you make to CONFIG.SYS won't take effect until you restart your computer.

ANSI.SYS AND THE ESCAPE CHARACTER

When an article says you must have ANSI.SYS installed, it means that the MS-DOS file ANSI.SYS should be in your \DOS directory, and the following line should be in your CONFIG.SYS file:

```
DEVICE=C:\DOS\ANSI.SYS
```

Some articles that discuss ANSI.SYS will also ask you to create a batch file that uses the escape character. Unfortunately, there's no uniform method of doing so. If you use EDIT, the text editor that comes with MS-DOS, you can make an escape character by pressing Ctrl+P and then the Esc key. The escape character appears on screen as a small left-pointing arrow. If you're using another text editor or word processor, check its instructions for information on how to enter the escape character.

THE AUTOEXEC. BAT FILE

Most people have a batch file called AUTOEXEC.BAT on their hard disks. If you want to look at it, first go to your root directory by typing `CD\`. Type `DIR` to make sure AUTOEXEC.BAT is there. Then type the following command:

```
TYPE AUTOEXEC.BAT | MORE
```

A simple AUTOEXEC.BAT file might look like this:

```
@ECHO OFF
PROMPT $P$G
PATH=C:\DOS;C:\WINDOWS;C:\WP51;C:\BAT
C:\DOS\SMARTDRV.EXE
C:\MOUSE\MOUSE.COM
C:\DOS\DOSKEY.COM
SET TEMP=C:\TEMP
```

When a *DOS World* article instructs you to modify your AUTOEXEC.BAT file, always make a backup copy of the original AUTOEXEC.BAT first. The most common names for your backup copy are AUTOEXEC.BAK or AUTOEXEC.BK. The latter lets you save different versions of your backups—for example, AUTOEXEC.BK1 and AUTOEXEC.BK2. You create a backup copy with the following command:

```
COPY AUTOEXEC.BAT AUTOEXEC.BAK
```

Also, you should have an emergency boot disk available whenever you modify AUTOEXEC.BAT. (See the accompanying section on the facing page, top.) It will let you access your hard drive in case you make an error that locks up your computer. Changes you make to AUTOEXEC.BAT won't take effect until you restart your computer.

BATCH FILES

A batch file is a text file that tells MS-DOS to do a series of tasks. The filename of a batch file always ends with the extension .BAT.

A batch file must be in plain-text format. For example, a batch file might consist of the following lines:

```
CD\
DIR /S /P
```

This batch file moves you to the root directory (CD\) and then gives you a list of all files in all directories (/S), pausing after each full screen (/P).

Every batch file needs a name. In such cases, you should pick your own name. Batch-file names carry the same limitations as any other DOS filename; you're limited to eight characters, plus a three-character extension. A batch-file name must always use the .BAT extension.

To avoid confusion and unexpected results, don't give any batch file the same name as another program or DOS command. For example, VCOPY.BAT is an acceptable name for a batch file, but not COPY.BAT or XCOPY.BAT, because COPY and XCOPY are the names of DOS commands. To run or execute a batch file, type its name at the DOS prompt. For example, to run a batch file called VCOPY.BAT, type `VCOPY` at the DOS prompt.

Creating and Saving

Using EDIT. If you have DOS 5 or later, you can create a batch file using EDIT. EDIT usually resides in your DOS directory. Type `EDIT` and enter your batch file. When you're done, press Alt+F and choose the Save option. Type the name of your batch file (make sure you add the extension .BAT) and press the Enter key.

Using other word processors. Most word processors don't save files in plain text; they include other characters, such as control characters that handle such matters as page formatting and typefaces. Most word processors, however, do give you an option to save in plain text. The procedure varies from one word processor to the next. For example, when you save a file in WordPerfect 5.1, you choose ASCII Text (DOS) as your Format option.

This Magazine

MAKING AN EMERGENCY BOOT DISK

Sometimes a *DOS World* article will suggest that you create a *bootable floppy*—a floppy disk that serves as an emergency system disk. That is, if your computer for some reason can't access your hard drive, you can start your computer from the emergency floppy. You should always have an emergency system disk available, but it's particularly important when you modify AUTOEXEC.BAT or CONFIG.SYS because you may change those files in such a way that your computer won't start from the hard drive. To create a system disk:

1. Insert a floppy disk in drive A.
2. At the command line, type FORMAT A: /S (all existing information on the floppy will be lost).

DOS first formats the floppy disk. Then it copies three DOS system files to the floppy disk: IO.SYS, MSDOS.SYS, and COMMAND.COM.

The first two are hidden files; you won't see them if you type DIR A:. If you have the disk-compression program DoubleSpace on your computer, the FORMAT command above will also copy DBLSPACE.BIN, a third hidden file, to the floppy disk.

After you've created your system disk, you should copy a few other basic files to your floppy. Go to your \DOS directory and copy the following files: FORMAT.COM, EDIT.COM, EDIT.HLP, QBASIC.EXE, UNDELETE.EXE, CHKDSK.EXE, FDISK.EXE, and SETUP.EXE.

DEBUG SCRIPTS

A Debug script is a list of assembly-language instructions you convert to an executable program using the program DEBUG.EXE in your \DOS directory.

Creating the script. A Debug script must be in plain text. The procedure for creating the script is the same as for creating a batch file. You can use DOS's EDIT program, or you can use a different text editor or word processor and save the script in plain text format.

Creating an executable program. After creating and saving the script, type the following command at the DOS prompt:

```
DEBUG < filename
```

where *filename* is the name of the Debug script you created. For example, if the name of your Debug script is KEYPRESS.SCR, you'd type this line:

```
DEBUG < KEYPRESS.SCR
```

at the DOS prompt. The executable program created by Debug will have the extension .COM. The name of the executable file is determined by the contents of the script. Our convention is to use the same name for the executable file as we do for the script. Thus, the executable file created by KEYPRESS.SCR will be named KEYPRESS.COM. Once you've created the executable file, you run it by typing its name at the DOS prompt. To run KEYPRESS.COM, type `KEYPRESS`.

PATHS AND THE PATH STATEMENT

DOS World articles often tell you to make sure that a particular file is in a directory included in your PATH statement. This lets you run a .COM, .EXE, or .BAT file from any directory on any drive.

For example, an author might tell you to create a batch file called TEST.BAT, put it into a subdirectory called \BAT, and put the subdirectory into your PATH statement. You can then execute TEST.BAT by typing `TEST` from anywhere on your drives, without having to change to the \BAT directory first.

The PATH statement is a line in your AUTOEXEC.BAT file. It gives DOS a list of directories to search for requested files. Here's an example:

```
PATH=C:\DOS;C:\WINDOWS;C:\BAT
```

When you type `TEST` at the DOS prompt, DOS looks for the program first in the current directory, then in the root directory, and then, in order, the \DOS, \WINDOWS, and \BAT directories. When it finds TEST.BAT in the \BAT directory, it executes the batch file.

Continued on page 64

BASIC DEFINITIONS

DOS prompt. Also known as the *command prompt*. By default, the DOS prompt looks like this: C:\>. This is where you type the instructions to run programs or DOS commands.

Boot, boot up, reboot. The process of starting or restarting your computer. Turning on your computer is *booting* or *booting up*. Pressing the key combination Ctrl+Alt+Del restarts, or *reboots* your computer. So does pressing the reset button, if your computer has one.

Extensions. When we refer to a program by its common name (for example, the DOS command FORMAT) without an extension, you can assume that the extension is .COM or .EXE. When we refer to a batch file, we always include the extension .BAT. QBasic program names must always include the .BAS extension.

ASCII. American Standard Code for Information Interchange. For our purposes, an ASCII file is a plain text file, one that consists entirely of the characters you see on your keyboard.

Directories. Your hard drive has a main directory called the *root* or *home* directory. Directories created off the root directory are called *subdirectories*. When we provide the name of a subdirectory, it will look something like this: \WORD\FILES. Here, the root directory has a subdirectory called WORD, which in turn has a subdirectory called FILES.

File placement. We assume that the following files are in your root directory: AUTOEXEC.BAT, CONFIG.SYS, and COMMAND.COM. We also assume that your DOS files are in a DOS subdirectory, usually called \DOS.

Keystroke combinations. When you should hold down one key while pressing a second, we indicate it this way: Alt+F4 (press the Alt key and hold it down while you press the F4 key). When you should press one key, release it, and press another, we indicate it this way: Alt, F4 (press the Alt key, release it, then press the F4 key).

QBASIC PROGRAMS

QBasic is the programming language included in all versions of MS-DOS since version 5. The name of a QBasic program always ends with the extension .BAS.

Typing in the listing. Type `QBASIC` at the DOS prompt and press Enter to start. Now type in the listing as printed, pressing Enter at the end of each line. Note that when a line in the listing is indented two spaces from the line above and doesn't start with a command or keyword, it's a continuation of the previous line. Other indentations, or none at all, indicate a new line.

Subroutines and functions. QBasic listings often include subroutines and functions, and typing them is confusing at first. They begin with a line containing the keyword SUB or FUNCTION. Note that when you type a SUB or FUNCTION line and press Enter, all other lines you've typed will disappear from view. This can be disconcerting for beginning programmers. There's nothing to worry about—your listing is safe. To avoid screen clutter, QBasic simply hides other parts of your listing when you're typing in a subroutine or function. To see the other parts of your program, open the View menu at the top of the QBasic screen, then select SUBS. The SUBS dialog box will appear, letting you select the part of the program listing you want to view.

Saving a listing. Save your partially completed listing as you go along, rather than waiting until you've typed in the whole thing. To save, open the File menu, choose Save, and type in a filename when QBasic prompts you. We suggest using the filename specified in the magazine article. Subsequent saves of your listing won't prompt you for a filename, but will instead use the filename indicated the last time you saved the listing.

Running a program. After you've typed in the entire listing and saved it a final time, you can run the program by selecting Start from the Run menu or pressing Shift+F5. If QBasic finds an error, it will stop the program and highlight that line. To run a QBasic program (a .BAS file) stored on your hard drive, start QBasic, then select Open from the File menu. Choose from among the .BAS files displayed in the open dialog box to load the program into QBasic, then select Start from the Run menu or press Shift+F5. To stop a QBasic program, press Ctrl+Break; select Exit from the File menu to return to DOS.

DOS World BBS. Typing and debugging a long listing is time-consuming. If you have a modem, our listings are always available on *DOS World*'s bulletin-board system (BBS) at 603-924-3181. There are no connect-time charges; you pay only for the phone call. Set your communication program to 8 data bits, no parity, 1 stop bit (8, N, 1). Dial the number and wait for the "Connect" message. If you're a first-time user, the system will ask you to enter your name and choose a password. Then it will display a general information screen, followed by a questionnaire requesting your address, phone number, and so on, so that we may set up your account. From this point, on-screen prompts are the same for all users. A series of messages presents the latest BBS news; press Enter after each message to go to the next screen. From the Bulletin Menu, Bulletin #1 offers information on navigating the Main and File Menus, with instructions for listing, marking, searching for, and downloading files. ■

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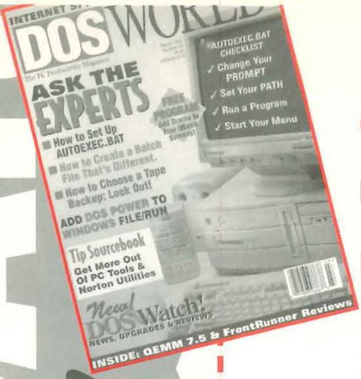
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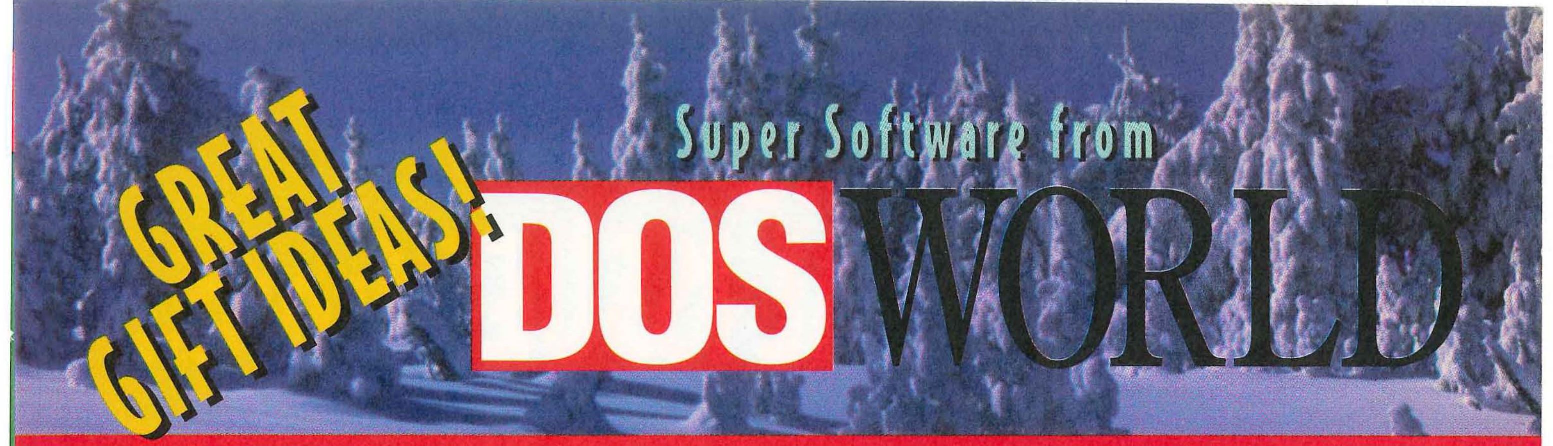

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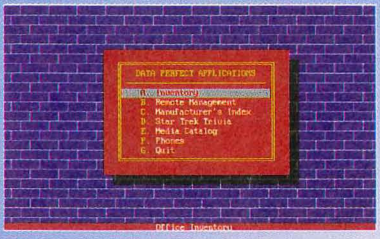

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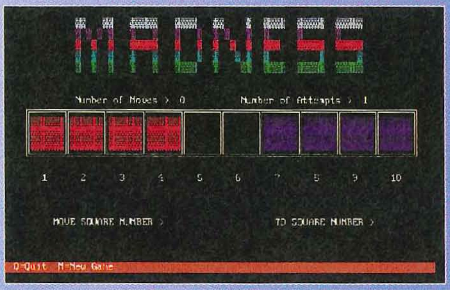

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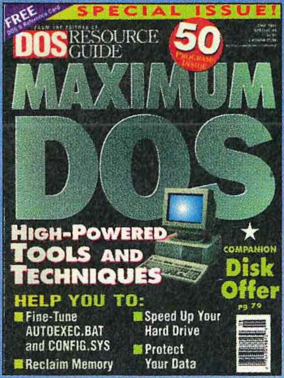

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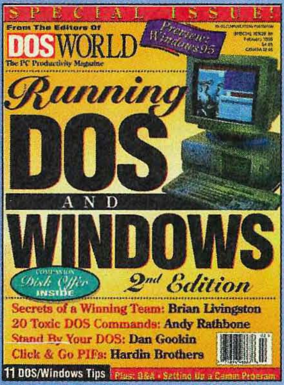
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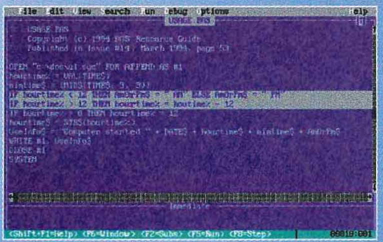
File Edit View Search Run Debug Options Help
USAGE.BAS
Immediate
<Shift+F1=Help> <F6=Window> <F2=Subs> <F5=Run> <F8=Step>
00018:001

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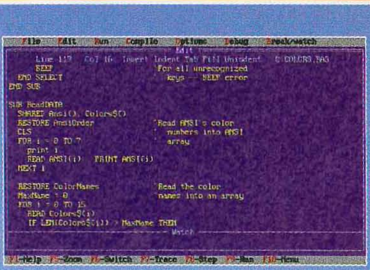
File Edit Run Compile Options Debug Break/watch
Edit
Watch
F1-Help F5-Zoom F6-Switch F7-Trace F8-Step F9-Run F10-Menu

```
    Line 117  Col 16  Insert Indent Tab Fill Unindent   C:COLORS.BAS
      BEEP                            'For all unrecognized
   END SELECT                          keys -- BEEP error
END SUB

SUB ReadDATA
  SHARED Ansi(), Colors$()
  RESTORE AnsiOrder                   'Read ANSI's color
  CLS                                 '  numbers into ANSI
  FOR i = 0 TO 7                      '  array
    print i
    READ ANSI(i)   PRINT ANSI(i)
  NEXT i

  RESTORE ColorNames                  'Read the color
  MaxName = 0                          names into an array
  FOR i = 0 TO 15
    READ Colors$(i)
    IF LEN(Colors$(i)) > MaxName THEN
```

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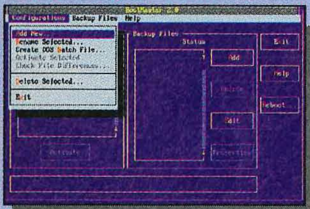
UPGRADE UPDATE



■ **BootMaster 2.0**, a file-setup utility for DOS and Windows, lets you create, maintain, and activate up to 999 system configurations on the same PC—for networking, programming, video drivers, e-mail, CD-ROM games, and more. Enhancements from the previous all-DOS program include simultaneous editing of multiple text files in different configurations, the ability to create DOS batch files and Windows icons for quick configuration activation, and a new command-line interface. *BootMaster 2.0, $59.95; Summit Software, 108 Glenstone Lane, Cary, NC 27511; 800-362-4208.*

■ If you have tons of important data you want to convert quickly to a database, check out **Recognita Form 2.0**, a high-speed, high-volume recognition program that reads form data via OCR and bar code and then transfers it directly into database format. Recognita can handle structured forms such as tax returns, insurance claims, registrations, medical reports, and lengthy questionnaires. An optional add-on module supports handwriting recognition. For the high-volume professional, Recognita runs on 386 or later PCs and costs $2500. *Recognita Form 2.0; Recognita Corp. of America, Sunnyvale, CA; 800-255-4627.*

Continued from page 80

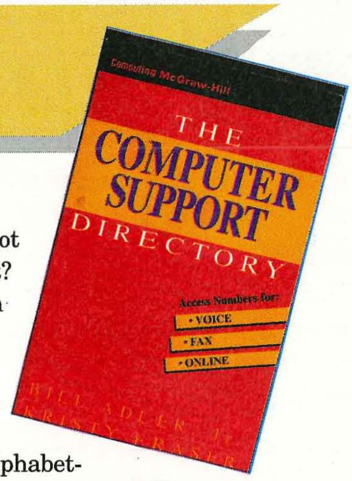
while the software's General Manager feature lets you project what your veterans, rookies, and entire team will look like five or ten years down the road.

Extras and perks abound: Draft new players fresh out of college, for example, and even get great video tips from LaRussa on managerial strategies.

If you love baseball or even just a cookin' computer game, this DOS spectacular will liven up the meanest winter—or the next year the players go on strike.

Tony LaRussa Baseball 3, *$59.95; Stormfront Studios, P.O. Box 11686, San Rafael, CA 94912-9904; 800-245-4525; requires 386 or later PC, 4MB RAM, Super VGA, DOS 5 or later, 6MB free hard-disk space, CD-ROM drive; mouse recommended.*

The PC User's 911 Handbook



Got a bad command or filename? Memory demands got your PC tied up in knots? Whad'ya mean, IRQ conflict? Don't abort or fail to follow through—give it a retry with ***The Computer Support Directory***, a new pocket paperback from Computing McGraw-Hill, compiled by career journalists and book publishers Bill Adler Jr. and Kristy Fraser. Virtually every major DOS and Windows software and hardware company is listed, in alphabetical order, complete with their telephone, fax, and on-line technical/customer-support numbers. The book also includes a basic troubleshooting guide for both DOS and Windows environments, so that you can run your own tests before embarking on the often time-consuming journey of "all-our-representatives-are-busy-please-hold."
The Computer Support Directory, *$12.95; Computing McGraw-Hill, 1221 Avenue of the Americas, New York, NY 10020; 212-512-2000.*

Not Quite a Chicken In Every Pot, But . . .

Two kids, two cars, a Fido, and a Felix—and, coming soon to every American household, at least one PC. Perhaps two? Well, maybe not overnight, but the trend in computer buying seems to be that America is becoming more and more "at home" with business.

According to **Tech/Track**, an ongoing survey of technology in the American home, as of the first quarter of 1995, one out of three households in the United States that already have one PC now have more than one—mostly for some type of business use.

The two-year **Audits & Surveys Worldwide** study, representing more than 40,000 randomly selected households, estimates that 8.6 million American homes now "own" multiple computers. (Ownership means that the home PCs aren't borrowed from work or school.)

If you're a new user, take a moment to meet your fellow home computerists. Most of you don't like your peripherals piecemeal; you'd much prefer a complete package with mouse, modem, CD-ROM, and color monitor. You use your home PC mostly for personal finance, but also for small-office/home-business applications, education, reference, e-mail, and work you bring home from the office. And, by the way, check your wallet: You spent about $1841 for your system.

In all, the survey estimates that 29.8 million out of 96.39 million households—about 31 percent—across the country now possess at least one PC. But it's still a long way from "home, tech home." The answering machine (63 percent) and the VCR (88 percent) still rule American households.

A Blue Christmas for PC Video?

As summer drew to a close, some multimedia software producers were pessimistic that the long-awaited promise of full screen, full-motion Windows video would be fulfilled in time for the forthcoming holiday season. The reason? Too many varieties of the so-called MPEG-1 video driver—the key to viewing quality full-screen PC video in Windows.

"This reminds me of the problems we had when the first sound cards came out," says Rett Crocker, senior software author at **IntelliMedia Sports Inc.**, in Atlanta, Georgia. Crocker's company is known for its library of sports-instruction software, produced in cooperation with cable-sports giant ESPN.

The MCI MPEG (Motion Picture Experts Group) standard, developed for industry-wide consistency in compressing and decompressing still images and video sequences, is apparently a horse of many colors. For example, IntelliMedia says it has yet to find one driver that complies with the entire MCI command-set specification, nor has it found any two on the market that work alike.

Although each MPEG driver tested this summer by IntelliMedia supported minimum MPEG functionality, such as play, pause, and stop commands, some didn't support other key commands, such as getting and setting audio volume, resuming playback after pause, and cueing video to a specific frame.

Each driver, the company found, seemed to handle each command differently, and sometimes commands were just incorrect; for example, when the video should have stopped, it paused instead.

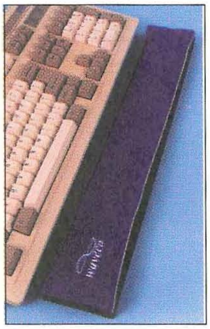
In an understatement, IntelliMedia summed up the situation: "This is a real problem for developers, who must rely on standards to make their applications run on a variety of systems."

Meanwhile, Diamond Multimedia is trying to close the compatibility gap with its **Stealth64 Video 3200** graphics accelerator—for producers and users of Windows-based full-motion video programs. It incorporates a variety of formats: not just MPEG-1, but also Indeo 3.2, Cinepak, and MS Video 1. It sells for $319. For more information, contact *Diamond Multimedia Systems Inc., 2880 Junction Avenue, San Jose, CA 95134-1922; 408-325-7000.*

ONE GOOD HEALTH SCREENING...

If you're concerned about the possible hazards of radiation from your computer screen, cozy up to **ScreenGuard**, from ScreenGuard USA Inc. The kit is designed to harness nasty emissions from the entire monitor—including top and sides, where the most harmful radiation is said to originate. Symptoms of monitor radiation range from eye fatigue to skin and nerve disorders. The kit takes less than 15 minutes to install; it includes conducting liquid, a self-adhesive discharger, and a conductor strip for the keyboard that enables static electricity accumulated in your body to be discharged safely to the ground. **ScreenGuard**, *$54.99; ScreenGuard USA Inc., 1442A Walnut Street, #353, Berkeley, CA 94709; 510-528-1326.*

...DESERVES ANOTHER



For more good computing health, there's **Waterbed for Your Wrists**, a wrist rest you place in front of your keyboard. It's filled with a high-viscosity fluid to provide maximum keyboarding comfort, and is designed to help combat that annoying pain and fatigue associated with extended typing.

This product uses fluid rather than a solid substance because of its vibration and shock-absorbing properties; according to the Centers for Disease Control, vibration has been shown to be an important factor in carpal tunnel syndrome. To really chill out, you can also refrigerate Waterbed for Your Wrists if you want to try cold therapy for aching joints. **Waterbed for Your Wrists**, *$19.75 plus shipping; Waveco, P.O. Box 1331, Palmetto, FL 34220; 813-723-2229.*

■ American Megatrends has introduced **AMIDiag 4.5a**, a diagnostics programs for IBM PCs with 8086, Pentium, or P54C processors, or compatible processors from other manufacturers.

The software includes numerous test routines for every major component and subsystem. It also shows detailed information on network environments, multimedia setup, power management setup, and connected SCSI devices.

Version 4.5a can also test memory up to 4GB, exceeding the amount of system memory normally reported by most systems' BIOS. *AMIDiag 4.5a, $179 (lower upgrade prices available); American Megatrends Inc., 6145-F Northbelt Parkway, Norcross, GA 30071; 404-263-8181.*

■ The newest version of SmithMicro Software's **HotDisk**, a remote-access file-transfer utility, features faster performance, the ability to redirect print output from a remote location to the host system, and serial and parallel port cables for direct connection capabilities (no modem or telephone line necessary).

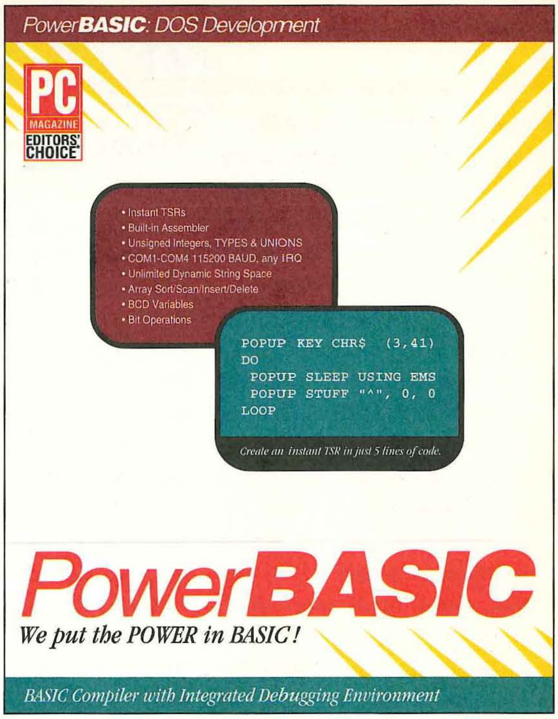
Transfer rate in serial mode is 115,200 bps, and in parallel-port mode up to 230,000 bps.

HotDisk can access both DOS and Windows files, and switch automatically between the two while connected. *HotDisk 2.0, $129.95; SmithMicro Software, 51 Columbia, Aliso Viejo, CA 92656; 714-362-5800.*

"... DOS (BASIC) developers would do better to look beyond Microsoft.™"
PC Magazine, *September, 1993.*

PowerBASIC Awarded Editor's Choice

"These are tough criteria, and almost every product we looked at came up short. But not PowerBASIC, Version 3.0. Our Editor's Choice in the DOS category, it delivered in almost every regard. Its impressive feature set includes a wide selection of data types (including user-defined), support for unlimited string space, and the ability to create and manipulate large bit arrays. Its powerful editor and debugger make for fast development, and its in-line assembler is unique to the reviewed products. The fast compiler generates highly efficient executables for a wide variety of CPU/FPUs. The package also supports TSR Development. While price may not be a major issue for a professional development tool, the $149 price can't help but be attractive, and the product's documentation and support are exemplary." PC Magazine, September, 1993.


PowerBASIC: DOS Development
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PowerBASIC
We put the POWER in BASIC!
BASIC Compiler with Integrated Debugging Environment

```
POPUP KEY CHR$  (3,41)
DO
 POPUP SLEEP USING EMS
 POPUP STUFF "^", 0, 0
LOOP
```

Create an instant TSR in just 5 lines of code.

Move Up to . . .

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Struggling with slow interpreters like QBasic or BASICA?™ Unhappy with bugs and out-dated performance of other compilers? Then it's time to upgrade your code to PowerBASIC™ 3.0! Source code is 99% compatible with QuickBasic, so the move up to PowerBASIC couldn't be easier. Blazing speed ... precise calculation ... and a myriad of advanced features make PowerBASIC 3.0 the upgrade of choice.

Instant TSRs

Create Pop-Up TSRs with just five lines of code. A 600K TSR can "pop-down" to a memory image of just 4K, with automatic memory swapping to EMS or virtual disk. Plus, two-way communication between multiple TSRs is offered.

Built-in Assembler

Hand optimize critical sections of your code for absolute performance. Whether 1 line or 1000, mix BASIC and Assembler — the decision is yours.

Advanced Data Types

Unsigned integers (byte, word, double word). User-defined TYPES and UNIONS. Quad-word, 64-bit integers. Extended precision, 80-bit floats. Dynamic, fixed-length, and flex strings.

BCD Variables

Eliminate round-off errors, even those with currency variables. You aren't forced to use 4 decimal places. Rather, choose from 0 to 18 digits — always with automatic rounding to the precise level needed.

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COM1 through COM4. BAUD rates to 115200. Non-standard IRQ lines are all supported.

Advanced Features

Unlimited dynamic string space. Array Sort, Scan, Insert, Delete. Procedural floating point option for fast non-8087 performance. BIT Shift, Rotate, Test, Set, Reset, Toggle. Implied bit arrays up to 512K bits. Conditional compilation ($IF, $ELSE, $ENDIF). Text viewports. EXIT FAR allows multi-level sub/function exit (beats the LONGJMP in C, any day).

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Hey Mac, Can We Share?

It may not be the Hatfields and the McCoys, but let's face it—the Macintosh and the IBM PC have never been the best of friends. But you can at least get the two talking—which is good news if both systems share a spot in your home or office—with **Mac-in-DOS Plus** for the DOS and/or Windows environment.

It may be a one-way street, but this little program lets your PC read and write Macintosh disks in binary or text mode, and can read and write Mac data on SyQuest, Bernoulli, and Sony magneto-optical cartridges. Share two-family data, and transfer files simply and quickly.

Mac-in-DOS Plus, *$189 complete (upgrades less); Pacific Micro, 201 San Antonio Circle C250, Mountain View, CA 94040; 415-948-6200.*

A REALLY BIG BLUE

IBM has jumped into the supersonic consumer-computing race with its **IBM PC 300** series, featuring 75MHz and 90MHz Pentium models. These early-summer entries join IBM's recently announced 120MHz Pentium, the PC 700.

Included in the PC 300 series is IBM's SelectaSystem, which lets users quickly choose either OS/2 Warp or DOS/Windows (Win95-compatible) simply by clicking on an icon. Big Blue's OS/2 package includes a BonusPak of more than a dozen applications, including one-button access to the Internet and CompuServe.

Also featured in the PC 300 series models are NetFinity, a single-source network-administration utility; Online Housecall, for direct IBM technical support; AnyView Graphics Manager, which lets you set graphics resolution and color without exiting and restarting your programs; and Scheduler, which lets you program your system to perform functions such as faxing documents during off-peak phone hours.

The PC 330 (three slots/drive bays) and PC 350 (five slots/drive bays) are available with either 8MB or 16MB of memory, and with either 540MB or 850MB hard drives. Prices start at $1880 (monitor not included).

IBM Personal Computer Company, *Route 100, Somers, NY 10589; 800-426-4329 (ask for fax document #3467).*

The POWER of 4 Becomes CONTAGIOUS

Add quad-speed CD-ROM plus sound to your PC without installing a separate audio board, courtesy of Micro Solutions' **4x CD-ROM Backpack with Sound Card**. The 16-bit sound card is connected inside the CD-ROM drive, and the whole package comes bundled with audio applications and DOS and OS/2 device drivers. Backpack is compatible with all Windows-based sound and multimedia applications. Use it for home entertainment, or to access massive amounts of data in seconds. It's easy to lug around, too—only four pounds. Suggested retail price is $659.

Micro Solutions Inc., *132 W. Lincoln Highway, DeKalb, IL 60115; 800-890-7227.*

Targeting the home and office user, Sony's **CSD-760E** quad-speed internal CD-ROM drive offers rapid data/image access time (250 milliseconds), Photo CD compatibility, and CD-Audio quality. Not only that, you can install it sideways, thanks to a motorized tray-loading design. Each drive comes with the necessary interface card and cables, a CD-ROM sampler disc, and bonus coupons for special offers on popular CD-Audio and CD-ROM titles. Suggested retail price is $269.95.

Sony Component and Computer Products Group, *3300 Zanker Road, San Jose, CA 95134; 800-352-7669.*

For a drive of a different kind, APS Technologies has introduced its **APS Q4.0** 4GB SCSI hard drive. It features a 5MB-per-second transfer rate for data entry, and 4.45MB-per-second rate for reading—believed to be the fastest in the industry. External and internal models are available. Prices start at $1499.95 (internal).

APS Technologies, *6131 Deramus, P.O. Box 4987, Kansas City, MO 64120-0087; 816-483-1600.*

And Where She Stops, Nobody Knows

One of the new leaders of the fast-PC pack is a graphics-oriented 133MHz Pentium from Tri-Star: the **Tri-CAD 133/SS**. Built around Intel's newest processor, the Tri-CAD comes with a 1.6GB hard drive, dual-channel 32-bit EIDE controller, 21-inch ViewSonic digital monitor, HEX-speed CD-ROM drive, and 28.8kbps internal fax/modem. Tri-Star doesn't pretend that this heavyweight belongs in your den; it's targeted mainly at engineers and CAD-system operators, for about the price of a good used car—$7399.

Tri-Star Computer, *2424 West 14th Street, Tempe, AZ 85281-6900; 602-731-4926.*

UNDER A KILLING MOON

Trouble Is My Business

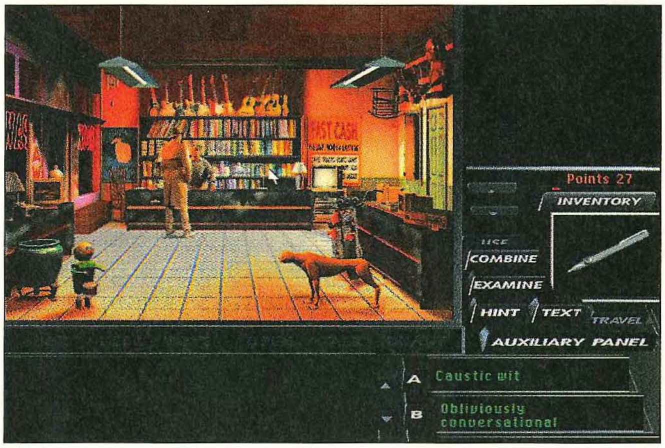
Multimedia DOS leads you on a magical mystery tour, with all the fun of a whodunnit novel.

by Alan Zeichick

It was late afternoon, and my double latte was too cool to call hot, but too warm to called iced. I was still shaking from a conversation with Big Steve, whose business card said "Senior Editor," but who was better known as "the Enforcer." It was about the review, of course. "Get it in soon, or else," he growled, and slammed down the phone. Guess it was time to boot my PC, before Big Steve booted my behind.

I looked over at my trusty number-cruncher. Yup, the pieces were falling into place: 486-33, lots of RAM, double-speed CD-ROM. Even a new Sound Blaster 16. I counted the discs: four. I counted 'em again. Still four. The next step was clear, even through my caffeine-induced fog. It was time to microwave my latte, and start playing some games . . . .

Although that's not quite the scenario presented in the DOS adventure/mystery game Under a Killing Moon, after playing for a while, it's hard to stop being a gumshoe. I'm rarely captivated by mystery novels or adventure games, but this one's got me hooked.



The great detective is interrogating pawnshop owner Rook Garner. You can see the choice of responses at bottom right, and the current inventory at center right. Note that the graphics in this screen capture are clearer than they were on the author's screen while he was playing the game.

Here's the situation: You're Tex Murphy, a down-on-his-luck private eye in San Francisco. The year is 2042. Your job: solving a murder mystery by checking out crime scenes and evidence, interviewing people, and being clever and thorough. If you succeed, you'll be able to pay off your creditors, at least until the next case.

Sound like a cliché? It is. It's hard to tell whether Under a Killing Moon is imitating cheap detective novels or mocking them. No matter; unlike most sci-fi games, Moon's designers have presented a comfortable and familiar world to explore.

Choose from three modes. There's "travel," where you use the mouse to move around rooms or streets. There's "look around" mode, where you stay in one place, and the mouse moves a magnifying glass around your field of vision. If the magnifying glass is on top of an object, you can examine it, pick it up or drop it, or use it (to open a door or turn on a computer, for example). The final mode is "talk," where you interact with preprogrammed characters. They say something, and you choose among three types of responses; depending on your answer, a character may help you out or, say, kick you out of his office. Moon's excellent digitized voices not only help you learn about the characters, but aid the "willing suspension of disbelief" that's critical to making this type of game work.

Minimum system requirements are a 25MHz 386, with 4MB of RAM and a 640-by-480-by-256-color display, CD-ROM drive, graphics card, and sound card; if you have a 16-bit card, you can listen to MIDI background music during the game, as well as clear, digitized speech. But although you can certainly enjoy this adventure on the minimal recommended platform, the graphics will be blotchy and not too much fun. The faster your CPU, the more memory you have, and the higher-quality your graphics card, the better.

I have just three complaints. First, moving around with the mouse is difficult; second, the digitized text for prompts, hints, and comments is blurry; third, when switching from "travel" to "look around" mode, the computer occasionally locks up, requiring you to reboot. That's when the policy "save early, save often" pays off.

Alan Zeichick is a computer journalist and writer in San Francisco.

Under a Killing Moon, $99.95
Access Software Inc.
4910 W. Amelia Earhart Drive
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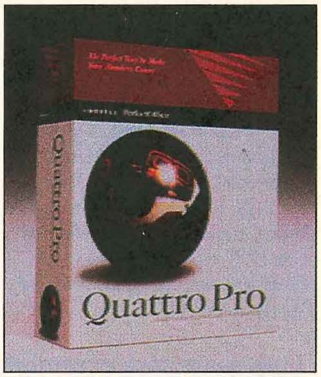
QUATTRO PRO 5.5 & WORDPERFECT 6.1

Novell Unleashes New Dimension of DOS Power

Rather than leave its DOS products by the side of the road, Novell has added octane to make them speedier and more versatile than ever.

by Mike Angelo

Dedicated DOS users have long thought that despite an ever-widening Windows world, motivated software developers and programmers could do just about anything in the DOS environment. Novell is one of several firms to successfully answer that challenge, recently introducing Quattro Pro 5.5 and WordPerfect 6.1—two upgrades that show off DOS's breadth and brute power.



Quattro Pro 5.5: DOS meets GUI, for a bigger and better feature set.

Calc Power

Quattro Pro 5.5 for DOS, a full-featured spreadsheet program, includes more than 20 new features or improvements over 5.0. Among the most significant are QuickTemplates, SpeedFormats, and SpeedFills, plus advanced cell formation and an expanded gallery of clip-art files. And keeping in step with the '90s-style networked business office, the new QP is also compatible with Novell NetWare and Lotus 1-2-3 menus.

Although version 5.5, like previous Quattro Pros, offers high-powered functions only a bookkeeper or a rocket scientist could love, its other dimension is one of simplicity and efficiency. For example, QuickTemplates are—just as they sound—ready-made templates that help you get started on a variety of Quattro Pro spreadsheet projects, or help you make your data into an attractive presentation. You simply open the QuickTemplate style of your choice, and then enter your data. It's that easy.

With 25 predefined SpeedFormats, you can also add a professional touch to your work by easily setting the color, shading, number format, font, and other attributes of a selected spreadsheet block; just highlight the cells you want to format, check out the various styles in the SpeedFormat menu, and click on your choice.

SpeedFill, meanwhile, lets you quickly enter sequential data in a range of cells. For example, if you want to set up a spreadsheet to keep track of sales for each month in a year, just enter `January` in cell A1, then select the SpeedFill option from the Edit menu tree. Next, enter a range of `A1` to `L1`. SpeedFill will then write in each month sequentially, in the first 12 rows of your selected range.

Version 5.5 also includes Graph Annotator, a full-featured drawing program that lets you customize graphs as well as import your choice of 60 clip-art images into your graph, then insert the entire package into your spreadsheet for concise summary and analysis.

Best of all, you can run the basics of version 5.5 on an 8088 PC with DOS 2.0 or later, and minimum 512K of RAM (640K or more is recommended). For a complete installation, however, you'll need at least 7MB of free hard-drive space, a mouse, a graphics card, and a color monitor.

Quattro Pro 5.5 for DOS, $59.95
Novell Inc.
1555 North Technology Way
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800-451-5151

Word Power

Everyone who uses a good word processor has basic demands: editing tools, footnotes, form letters, spelling/grammar checker. But then along comes WordPerfect 6.1 for DOS, which handles all the basics faster than ever, and then incorporates a wish list by letting you integrate spreadsheet and database material, and tap into graphics editing, desktop publishing, e-mail/fax, and sound, all without exiting to another application.

In all, Novell has incorporated more than 150 major and minor enhancements. The feature most often requested by customers, according to Novell product manager Dave Wright, is QuickCorrect, which automatically fixes common typing errors (such as turning *teh* into *the*) as you work at your keyboard. A QuickCorrect editing option also lets you set up a list of abbreviations for words or phrases you use most often.

Another popular user request has turned into what Novell calls Make-It-Fit—ideal for shrinking or even expanding projects

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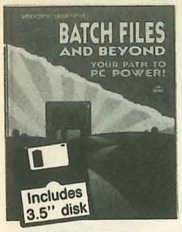

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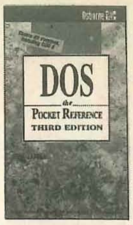

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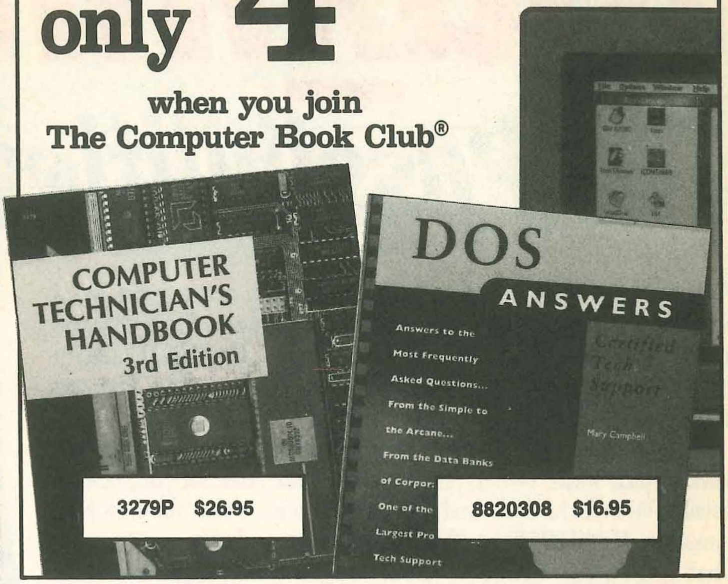
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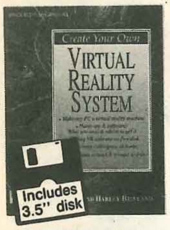

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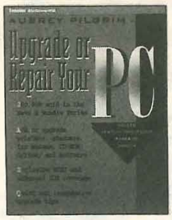

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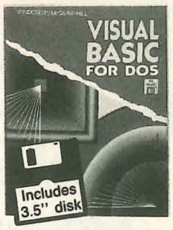

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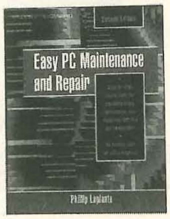

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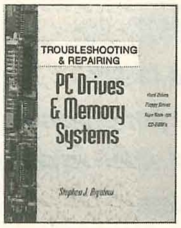

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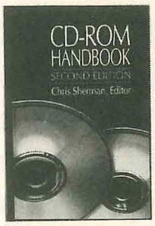

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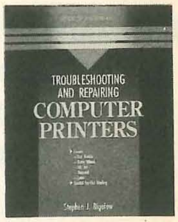

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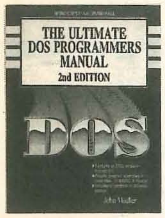

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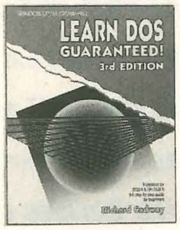

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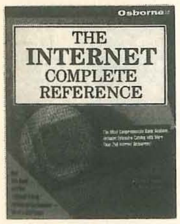

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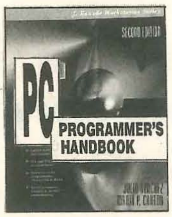

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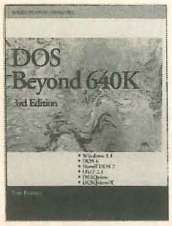

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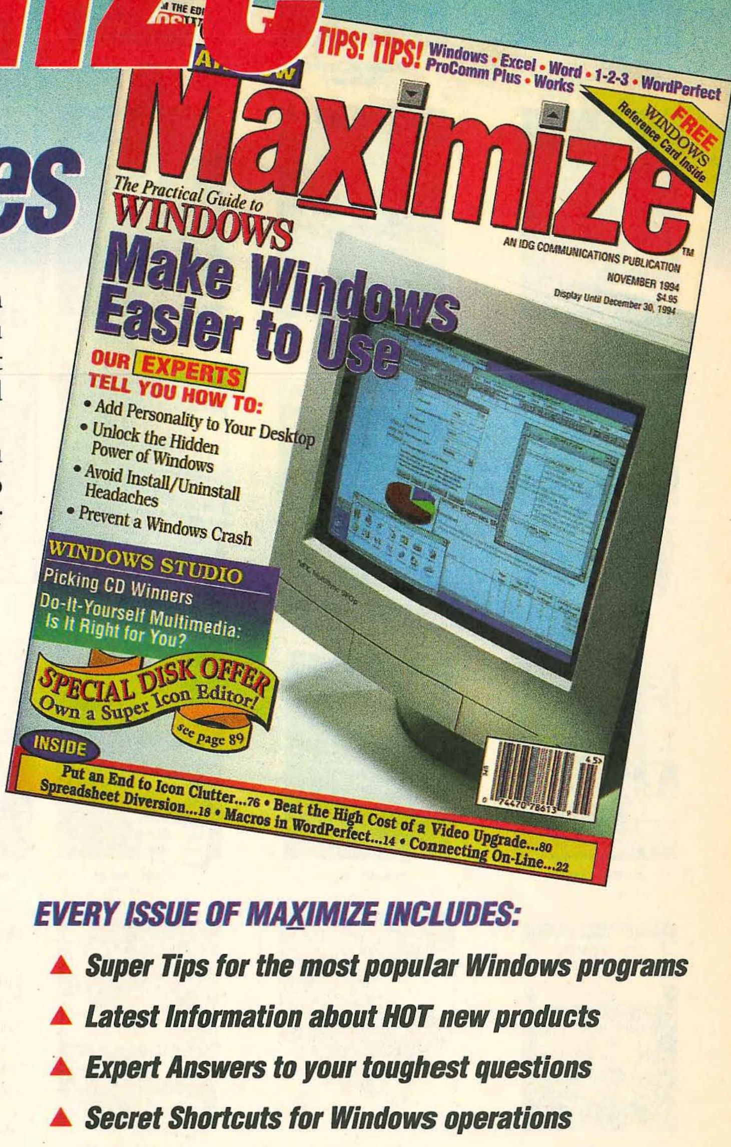
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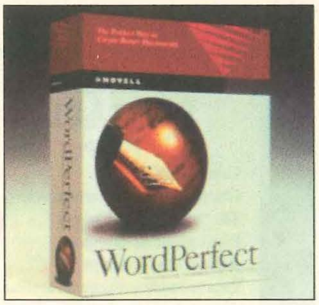
such as term papers or newsletters. Make-It-Fit automatically adjusts font sizes, line spacing, and margins to bump your text up or down.

Open-as-Copy is a new file-open option that lets you use an already-written document as a model for a new one (form letters, for example). Simply click on the Open-as-Copy option in the Open Document dialog box, then open your model document. Make your modifications and edits, and save your new document with a new filename. You can also use some 30 templates, such as balance sheets, brochures, and even greeting cards, as models for other documents.

Keep your right mouse button handy—you'll use it to display context-sensitive QuickMenus. When you click the right mouse button while in a text window, a short menu will pop up near your pointer.

Say, as you're typing along, that you want to check the spelling of a word in the middle of your document; just right-click your mouse, left-click on Spelling, then right-click on the word in question. Other QuickMenu options let you work in a similar fashion with margins, page numbering, tables, and footnotes.



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Although WP 6.0 introduced ten "coaches" that step you through the basics of features such as Drop-Caps and Make-It-Fit, version 6.1 adds 20 more. In essence, you and the coach work together to apply a feature to your document—almost like having someone right beside you to give pointers.

WordPerfect 6.1 offers Windows-style text- and graphics-mode desktops, including pull-down menus and button and ribbon bars. If you're a prolific writer, you'll like WP 6.1's print-spooling feature, which lets you continue editing or writing while a separate document is printing. In addition, a multiple-open-documents feature makes it easy to copy and paste text from one document to another, or to view several documents in tiled or cascaded display.

For a minimum installation, you'll need a 386 PC or better, DOS 3.1 or later, 480K of free conventional memory, and 7MB of available hard-disk space; full installation requires 510K of RAM and 16MB of available hard-disk space.

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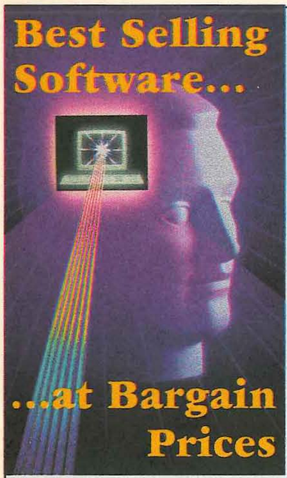

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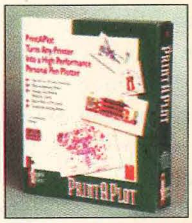

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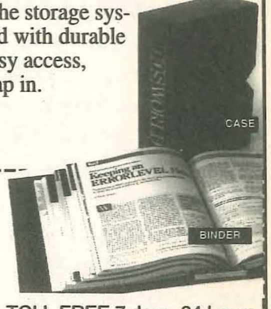

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DOS Watch

News and reviews of DOS enhancements, upgrades, and products

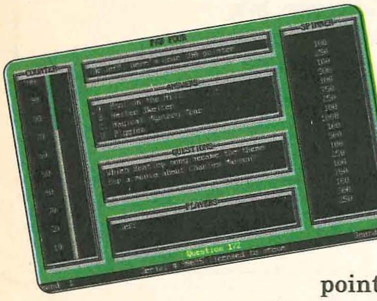
Edited by Steven F. Smith

From one end of the DOS spectrum to the other, here are two programs that let you check out your knowledge of Beatles lore and your knowledge of the Grand Old Game.

Fab Fun and a HOME RUN!

Fab Four 2.0 from SportsWare South is plain and simple, and pure fun for anyone who loves trivia games or once belonged to one of those neighborhood Beatles fan clubs. But more than just "yeah, yeah, yeah"-ing with John, Paul, George, and Ringo, you'll need to know their records—frontwards and sometimes backwards—as well as their lyrics, their concert oddities, and even their personality quirks.

Of course, you probably have to be at least 30 years old to really enjoy this little package, but your PC can be as old as the hills, too. Fab Four 2.0 requires no hard drive, mouse, or Windows—only DOS 2.11 or later, 384K of RAM, and a 3.5-inch drive. Play by yourself or against a partner. Hit any key to get the "spinner" rolling to determine the number of points your question is worth; hit it again to stop. Up to four possible answers appear on screen; then it's up to you to answer as quickly as possible when you see the question. (A "timer" decreases your point value for each second you delay.)



If you prefer the Motown sound instead, check out SportsWare's **Sweet Soul Music 1.1**, which contains hundreds of trivia questions about American soul music from the '50s through the '70s—groovers like Stevie Wonder and Otis Redding.

"These are games that are hopelessly behind the times, technically antiquated, and at least two generations of software development behind the times," boasts SportsWare South's publicity sheet. "All they are is fun."

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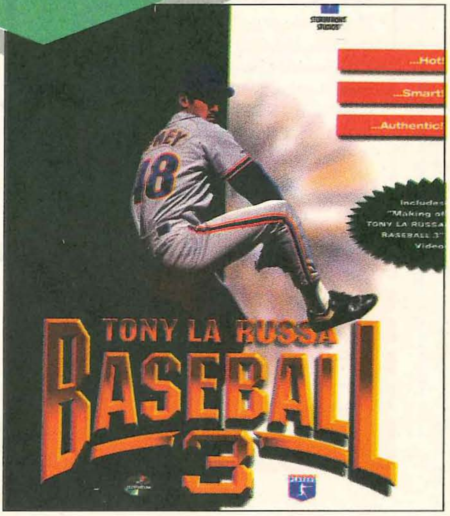
Move over, Windows. Baseball is a whole new game with a DOS-based CD-ROM multimedia project, **Tony LaRussa Baseball 3**, from Stormfront Studios. With stunning animation—without the herky-jerky movements of most Windows games—current Major Leaguers take to the field for what could be the most authentic baseball experience outside of the game itself.



As in the previous two versions of Tony-ball, game strategies and situations, plus managing instincts, are courtesy of the expertise of pennant winner and current Oakland Athletics manager Tony LaRussa. Statistics of today's major leaguers are current as of 1994, and the fanatical among you can even download the latest stats via modem.

But the real marvel is in the game's authentic action, unique "camera" angles, and detailed replications of all 28 major-league ballparks. Choose your teams—say, Cleveland at Boston—and the game takes you directly to historic Fenway Park and presents line-ups, stats, and photos of players from both teams. You even get our national anthem (or click on Enter to skip it). Play-by-play is courtesy of the voice of the legendary Mel Allen, Lon Simmons, or Hank Greenwald—your choice.

This game is so much like the real thing, the Major League Baseball Players Association has licensed it. Features that go beyond other DOS, Windows, or Nintendo-like baseball games include complete offensive and defensive statistics for every player, digitized color photos that actually look like the real-life players, two selectable camera angles—from behind home plate and from center field—and even batters who duck when Roger Clemens throws a high hard one.

But the game's not over with one play session. You can go through an entire season, complete with pennant races,

Continued on page 68

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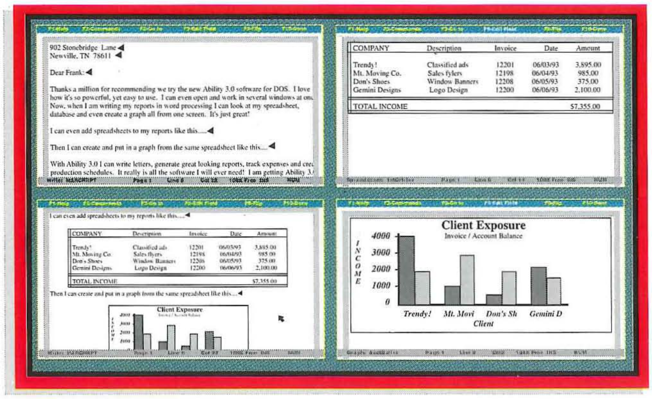

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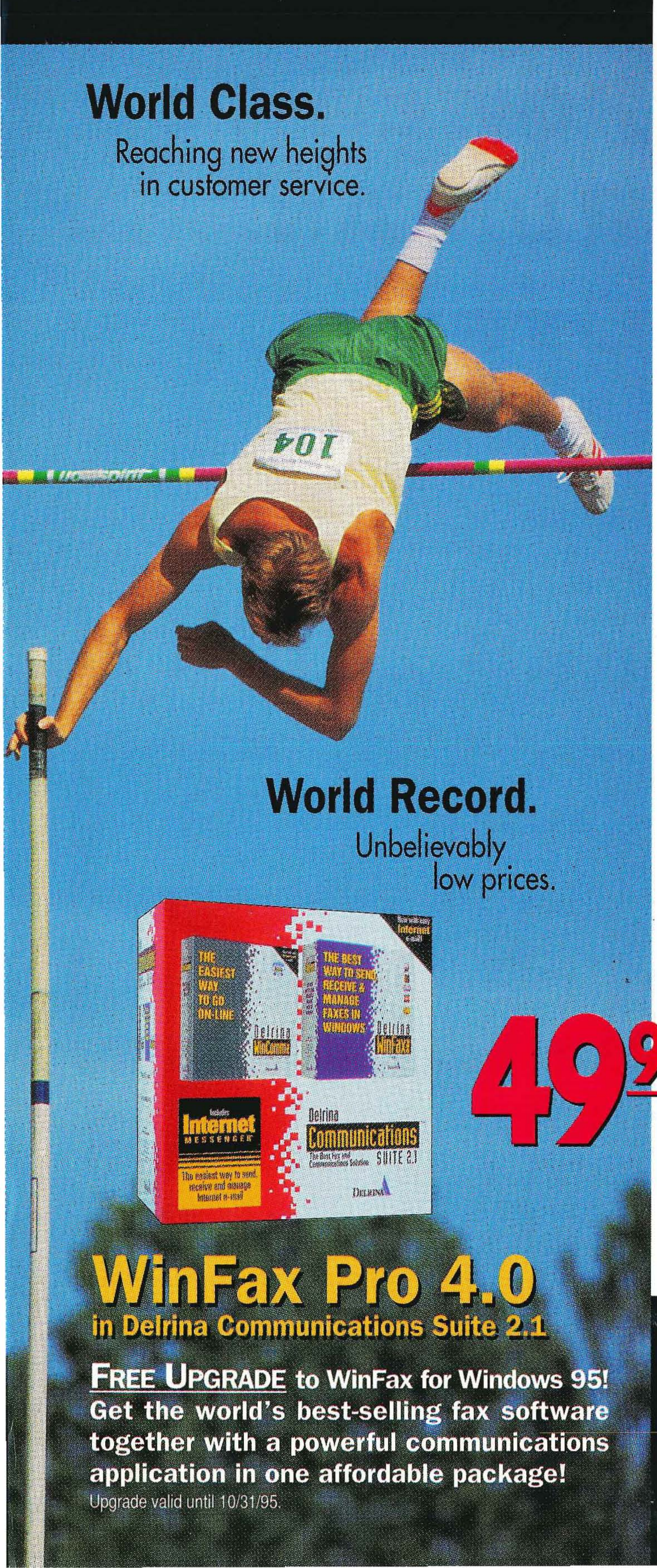

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